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5 April 2018

Deputy Chair Karen Chester
Commissioner Angela MacRae
Productivity Commission

By email

Re: Superannuation Inquiry – supplemental submission regarding performance research

Dear Deputy Chair and Commissioner,

I write to provide the Productivity Commission with a copy of a new report by Phil Gallagher and me regarding superannuation fund-level and option-level performance comparisons.

This paper addresses the claims by some, particularly representatives of retail superannuation funds, that performance comparisons of superannuation funds based on fund-level performance are not appropriate or relevant. The primary arguments against fund-level performance comparisons are that fund-level returns do not reflect the performance of the specific options held by members, and that retail fund level performance differs because of an older demographic and resulting lower risk preference.

We did not find empirical support for these positions.

Specifically, we found that:

- By comparing industry super fund pension options with retail super fund pension options in the each investment style categories established by SuperRatings, that there is considerable and consistent outperformance by industry super funds compared to retail funds at the option level. By comparing pension options with the same investment style, we ensured comparable demographic profile and expected risk level.
- Public sector superannuation funds have an older demographic than retail super funds, but deliver performance that is comparable to industry super funds. This tends to suggest that demographics is not driving performance differences, but that the way in which retail super fund trustees engage with members – such as the distribution and business model – is more relevant.
- By comparing superannuation fund-level rates of return published by APRA with option-level long term rates of return published by SuperRatings, that fund-level rates of return are very strongly correlated with option-level rates of return for both the largest option of a fund, and the aggregate options of a fund. Fund-level returns also correlate with single asset class option returns, such as cash option returns. Fund-level rates of return published by APRA therefore appear to provide a good guide for option-level performance and the outcomes achieved for fund members.

We also note that comparisons of fund-level performance continue to be important to assessing the quality and performance of a trustee regardless of whether they are correlated with option returns. Super fund trustees are responsible for fund-level strategies, which includes determining what products are offered to members, how many options are offered, the distribution and offering

strategy that results in members being allocated to certain products, the terms of outsourcing arrangements, as well as the features of each product (such as fees and asset allocation). The outcomes of super fund members also are affected by the decision making of a trustee after a member joins the fund and enters one or more products. Product features can change over time, including managers, fees, and investment strategies. The quality of trustee decision-making – the loyalty, level of care, and decision making ability – in respect of fund-level strategy is likely to be reflected in fund-level returns.¹

SuperRatings reviewed the research paper and found that its methodology was reasonable for the issues addressed by the paper and that the way in which data were handled was appropriate.

We would be very pleased to arrange a briefing on this research.

Thank you for your consideration of this letter and the appended paper.

Kind regards,

Zachary May
Director of Policy
Industry Super Australia

Attachment

“Are comparisons based on superannuation fund-level performance useful?” April 2018

Copy provided

Yvette Goss; super@pc.gov.au

¹ APRA has previously stated that “The Sole Purpose Test and the trustee’s Section 52 duties under SIS [the Superannuation Industry (Supervision) Act] strongly suggest that a trustee should operate a superannuation fund in a manner which is aimed at delivering good long term returns to members, with return aspirations constrained by the need to manage investment and purchasing power risk over the longer term. In this context, examining realized fund returns over time allows an observer to draw an inference about a trustee’s ability to construct and execute a strategy which is in the members’ best interest. Accordingly, APRA considers longer term fund returns a highly relevant though not definitive indicator of superannuation trustee performance in designing and delivering an investment strategy which is in the members’ best interest.” APRA (September 2008), *A Response to Review of APRA’s Investment Performance Statistics of the Australian Superannuation Industry*, at 10.

Are comparisons based on superannuation fund-level performance useful?

RESEARCH

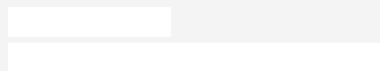
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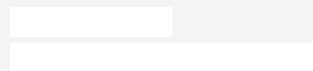
ABOUT INDUSTRY SUPER AUSTRALIA

Industry Super Australia is a research and advocacy body for Industry SuperFunds. ISA manages collective projects on behalf of a number of industry super funds with the objective of maximising the retirement savings of over five million industry super members. Please direct questions and comments to:

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Director of Policy



The statements contained in this paper reflect the opinions of the authors, based on their analysis of the relevant available data and specialised skills in the field. The information in the paper is of a general nature. You should consider your own objectives, financial situation and needs, which are not accounted for in this information before making an investment decision.

SuperRatings reviewed the manner in which this research has handled SuperRatings option-level investment performance data and the statistical methods applied to analyse this data. SuperRatings were of the view that the manner in which SuperRatings data had been used in the Research Paper was appropriate, and the methodology applied to investigate the issues raised by the Research Paper was reasonable. SuperRatings did not express an opinion regarding the findings made. All errors are the responsibility of the authors.

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FUND-LEVEL COMPARISONS

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KEY POINTS

- The Australian Prudential Regulation Authority has published audited, superannuation fund performance information for around 20 years. These data have been used to compare the performance of different sectors of the superannuation industry, such as industry super funds and retail super funds.
- Retail super funds have objected to the use of APRA fund-level statistics to assess performance. They have argued that the fund-level returns do not reflect the performance of the specific options held by members, and that retail fund level performance differs because of an older demographic and resulting lower risk preference.
- We do not find empirical support for the proposition that demographics and risk profile are responsible for relatively low retail super fund average performance.
 - Comparing pension options of similar asset allocation – which ensures both comparable demographic profiles and risk – shows that there is considerable and consistent outperformance by industry super funds compared to retail funds at the option level.
 - For example, the 25th percentile of industry super fund pension cash option returns is above or equal to the 75th percentile of retail fund cash option returns for one, five and ten year periods to June 2017. Since this is a pension option, there can be no material demographic difference.
 - In addition, public sector superannuation funds have an older demographic than retail super funds, but deliver performance that is comparable to industry super funds.
- Comparing superannuation fund-level rates of return published by APRA with option-level rates of return published by SuperRatings shows that fund-level rates of return are very strongly correlated with option-level rates of return for both the largest option of a fund, and the aggregate options of a fund. Fund-level returns also correlate with single asset class option returns, such as cash option returns. Fund-level rates of return published by APRA therefore appear to provide a good guide for the outcomes achieved for fund members.
- Fund-level performance data are relevant information regardless of whether they correlate with option level performance.
 - Comparisons of fund-level performance continue to be important to assessing the quality and performance of a trustee. The loyalty to members, level of care, and quality of decisions of trustees are important to members. Super fund trustees are responsible for fund-level strategies, which includes determining what products are offered to members, how many options are offered, the distribution and offering strategy that results in members being allocated to certain products, the terms of outsourcing arrangements, as well as the features of each product (such as fees and asset allocation). Trustees are legally responsible for the investment and other strategies of a fund (not just products) and this responsibility persists regardless of member investment choice, including where a financial advisor is involved. The outcomes of super fund members also are affected by the decision making of a trustee after a member joins the fund and enters one or more products. Product features can change over time, including managers, fees, and investment strategies. The quality of trustee decision making in respect of fund-level strategy is likely to be reflected in fund-level returns.

INTRODUCTION AND SUMMARY

The Australian Prudential Regulation Authority has published audited, superannuation fund performance information for around 20 years, including a time-series of fund-level rates of return since 2009. Fund-level performance information has been used by APRA and others for comparisons, including comparisons of different sectors of the superannuation system, such as industry super funds and retail super funds.¹ Research houses, government reviews, policy advocates, and many others also use this information to understand the superannuation system better.²

The appropriateness of these comparisons is, however, contested.

Retail superannuation funds – whose cumulative average performance has been lower than other kinds of super funds for as long as the comparisons have been issued – have challenged these comparisons. The most detailed public challenge was in a 2008 paper commissioned by what is now the Financial Services Council, which represents bank-owned and other retail super funds.³

The key criticisms put forward by bank-owned super funds of APRA sectoral comparisons (e.g., comparing industry super funds to retail super funds) based on fund-level performance are that:

- *Member outcomes are the result of product-level, not fund-level, returns; to the extent fund-level returns differ from product-level returns, fund-level returns should not be used for comparisons.* Representatives of retail funds have argued that “The real return of superannuation portfolios depends on the fund type (investment choice) selected by a member”.⁴ In other words, fund-level performance comparisons could create an inaccurate impression because a fund’s performance is not necessarily the same as the performance a particular member might receive based on the options the member is invested in.⁵
- *Retail superannuation funds have an older membership, which requires a more defensive asset allocation, resulting in lower net returns.* This argument claims that retail funds have an older

¹ See, e.g., APRA (2007): ‘Celebrating 10 years of superannuation data collection 1996-2006’, APRA *Insight* Special Edition, Issue 2. See also, Ellis, Tobin and Tracey (2008), *Investment Performance, Asset Allocation and Expenses of Large Superannuation Funds*.

² Some examples include, APRA (2007) cited above; the APRA research papers referenced in footnote 11; Grattan Institute (2014), *Super Sting: How to Stop Australians Paying Too Much for Super*, Grattan Institute (2016), *Super Savings*; and The McKell Institute (2014), *The Success of Representative Governance on Superannuation Boards*.

³ International Centre for Financial Services (July 2008), *Review of APRA’s Investment Performance Statistics of the Australian Superannuation Industry*, International Centre for Financial Services, July 2008. This report was commissioned by the Investment and Financial Services Association, now known as the Financial Services Council.

⁴ Id.

⁵ In recent times, bank-owned retail super funds have argued this point slightly differently: “Averages are misleading and the fund level data often cited is even more so. It includes all the investment options offered by retail platforms, including low yielding cash, bonds, which are designed to protect capital rather than post stellar returns”, Patten, S. (15 August 2017), ‘Bank super funds hit back at union-backed rivals’, *Australian Financial Review* (quoting a spokesman for the Financial Services Council, which represents bank-controlled super funds).

demographic, leading to members being placed in products with lower risk-return targets, which leads to lower fund-level returns.⁶

Do the banks and retail funds have a point?

APRA's position on comparisons based on fund-level returns is nuanced and appears to be evolving.

In 2008, APRA stated that "fund net ROAs [returns on assets] are the *best starting point* from which to assess *trustee performance*." (emphasis added).⁷

Underlying this view was a clear understanding of the purpose of the comparison: comparisons of fund-level performance are important in assessing the quality and performance of a trustee. Super fund trustees are responsible for fund-level strategies, which include determining:

- what products are offered to members, including the features of each product (such as fees and asset allocation);
- manager and other service provider selection; and
- the distribution and offering strategy that results in members being allocated to certain products.⁸

The quality of trustee decision making over the long term could reasonably be expected to show up in long term fund-level net returns on assets.

In 2008, APRA considered the claims by retail funds that: (i) fund-level return data should not be used because product-level analyses would differ and are more relevant to member outcomes; and (ii) retail fund demographics explain their lower fund-level performance. APRA observed that private sector superannuation research houses had analysed product-level returns based on investment style, rather than at the fund-level, and found that the results produced by these private sector research houses were

⁶ See, e.g., Briggs, B. (of the Financial Services Council) (20 November 2015), 'Governance change for the better', *Super Review*, 20 November 2015 (stating that "The myth [of industry super fund outperformance] is based upon comparing the investment performance of products catering to older members, which have a greater allocation to defensive assets; to those of younger members, which have a greater allocation to growth assets. Unsurprisingly, the returns are different. Returns also differ when the performance of choice investment options, such as 100 per cent cash or bond portfolio, are aggregated with a diversified MySuper product.").

⁷ APRA (2008), A Response to Review of APRA's Investment Performance Statistics of the Australian Superannuation Industry, at 3.

⁸ APRA's historical guidance makes clear that trustees are responsible for the investment strategies of a fund (not just offering products). See, APRA (2006), Superannuation Circular No. II.D.1 Managing Investments and Investment Choice (stating that "Trustees' responsibilities when making investment decisions include formulating and implementing an investment strategy or strategies. ... When formulating an investment strategy the trustee is required to consider, at the entity level, the risk and likely return from investments, the diversification of those investments, liquidity requirements and the ability of the entity to discharge its liabilities. Where investment choice is offered, beneficiaries may choose between strategies that have been developed by trustees according to this framework. ... The underlying policy intent is that the provision of member choice of investment strategy does not remove the need for the trustee to ensure that the investment strategy or strategies of the fund comply with the requirements set out in the legislation. Rather, s. 52 of the SIS Act should be read and complied with in its entirety. That is, trustees accepting member direction under s. 52(4) of the SIS Act are not relieved of their s. 52(2)(f) duties, most relevantly the duties to ensure a reasonably liquid and properly diversified fund.")

The trustee's responsibility to develop and execute a fund-level investment strategy persists regardless of member investment choice, including where a financial advisor is involved. See, *id.* (stating that "A trustee cannot abrogate responsibility in relation to investment strategies by requiring members to seek their own financial advice. ... APRA would be concerned if a trustee held the view that a financial adviser's involvement in the member's investment choice relieved the trustee of the duty to formulate and implement appropriate investment strategies for the fund.")

consistent with APRA's research and that retail fund underperformance was not attributable to member investment choice: "The material produced by these research houses is reasonably consistent with APRA's research findings. Retail fund under-performance does not seem to be explained by gross differences in member investment allocation selections."⁹

APRA also considered the claim that "retail funds might earn lower returns, because their membership base is more conservative due to age, and more in need of short term liquidity. Therefore, we are invited to infer, retail funds might plausibly earn less than not-for-profit funds, even as all trustees strive with equivalent skill and dedication to maximize fund members' interests". APRA concluded that this claim was "empirically unsupported" because, at the time, "corporate and public sector ROAs were statistically indistinguishable, somewhat higher than industry funds, and considerably higher than retail funds. Yet corporate and public sector member profiles are considerably older than is the case for industry funds. Public sector age profiles are in fact similar to retail funds. It is not at all apparent from the data that member age profile is driving ROAs."¹⁰

From 2006 to 2013, in addition to publishing fund-level performance information, APRA also undertook research and analysis using this performance data to better understand the superannuation system, trustee behaviour, and fund behaviour.¹¹ The APRA research group responsible for these reports was effectively closed down in 2013, and APRA's research functions were more closely integrated with a broader data analytics unit and supervision.¹²

⁹ APRA (September 2008), A Response to Review of APRA's Investment Performance Statistics of the Australian Superannuation Industry, at 4.

¹⁰ Id. at 9-10.

¹¹ Outperformance was attributed to agency costs associated with non-representative (i.e. retail) trustee boards (Coleman, Esho and Wong, 2006), higher embedded expenses incurred by investment vehicles of retail funds (Ellis, Tobin and Tracey, 2008), higher fees paid to related-party service providers (Liu and Arnold, 2010) and the investment in illiquid assets such as infrastructure (Cummings and Ellis, 2011).

¹² See, Hansard (13 September 2017), House of Representatives, Standing Committee on Economics, Australian Prudential Regulation Authority annual report 2016, at 8 ("Mr THISTLETHWAITE: You used to publish working papers, particularly in the form of research papers. I understand that the most recent one was in 2012. Can you tell us why you don't publish those anymore.

Mrs Rowell: APRA has changed its approach to research and industry analysis. We actually have recently incorporated a new data analytics area which is focused on undertaking industry analysis and individual entity analysis for APRA's own purposes and also manages the publications that we release. APRA, like any other agency, has limited resources, budget and staff. In making decisions about where we were going to invest our resources, we decided that we would not continue that research function and would focus on providing the statistics in our publications and undertaking analysis that supports APRA supervision.

Mr THISTLETHWAITE: So is it the case that those are no longer published because of budget issues in APRA?

Mrs Rowell: That is not strictly the case. We need to think about where the priorities are and what we think is important for us to be putting out in the public domain and making decisions about those. In part, it is to do with overall decisions about how we apply our budget and our resources and, in part, it is about: where should APRA's focus be in providing information and analysing information for our own purposes?).

See also, Hansard, 26 October 2018, Senate Economics Legislation Committee, Estimates, at 54 ("Senator GALLAGHER: You used to have a research unit at APRA, didn't you? Do you still have that?

Mr Byres: Not with the name 'research unit'. We've got a broader data analytics unit now, which is responsible for the statistical end of the collection of data but also for the analytics that come from the data—what is the data telling us? What are the interesting insights? It's not a research unit by title, but it is a group of people who are looking through the data trying to look for interesting trends and analysing what it's telling us.")

APRA's position could be shifting. In Issue 2 of its 2017 *Insight* bulletin, APRA included a discussion titled "Rethinking fund level performance".¹³ It indicates that fund-level performance "should not, on its own, be used to assess the performance of an [registrable superannuation entity] licensee."¹⁴

Underlying this caution about assessments based purely on fund-level data, APRA presented anecdotal information showing two superannuation funds with different demographic profiles, asset allocations, and proportion of members and assets in MySuper products, and observed that:

- "RSE structures differ significantly, reflecting a number of factors including underlying demographic differences and the proportion of assets held in MySuper vs choice investment options"; and
- "Fund level RoR [rate of return] is not reflective of the outcomes achieved for members as it does not accurately reflect the variation in cash flows and asset values that occurs within the fund. Within most RSEs, members participate in one or more different products. That means that assets generating earnings at the RSE level are the combination of assets held for MySuper products, choice investment products, pension products and also for fund reserves. These different segments typically have very different investment strategies, and hence asset allocations, that reflect their different purposes and risk/return targets. They are also likely to have different fees and costs."¹⁵

APRA stated that these differences across funds in terms of demographics, and assets in MySuper and choice products, "significantly diminishes the utility of the RoR calculation for assessing the quality of outcomes for members, and hence whether or not an RSE licensee is meeting its ongoing duty to act in the best interests of beneficiaries."¹⁶

APRA's 2017 publication presented anecdotal information rather than statistical information to show that there are differences between funds. That there are differences is well known. The fact that superannuation funds have different demographics and different proportions of members in different products has been the case since the inception of the superannuation system.

However, differences in demographics and product mix between retail super funds and industry super funds do not necessarily explain differences in fund-level or sector-level performance averages. Other differences between retail super funds and industry super funds, such as trustee structures, business objectives, and operating models, might have greater explanatory power. Whether differences in membership and product mix explain and justify differences in fund-level performance is the contested issue. Previously, APRA has squarely addressed the question using statistical analysis in prior publications.^{17, 18}

¹³ See, APRA (2017), *APRA Insight* Issue Two 2017. <http://www.apra.gov.au/Insight/Pages/insight-issue2-2017.html>

¹⁴ Id.

¹⁵ Id.

¹⁶ Id.

¹⁷ See APRA reports referenced above in footnotes 9, 10 and 11.

¹⁸ APRA performed statistical analysis on behalf of the Council of Financial Regulators to investigate the cause of retail super fund average underperformance, finding higher expenses and taxes implied at the option level were a key driver: "we find significantly lower average net returns relative to the benchmark for balanced and growth retail default investment options compared to other fund types, which implies that higher expenses and taxes, explicit and embedded, are the main component of average net return differences in balanced and growth investment options across fund types." APRA (2008) *Investment performance, asset allocation, and expenses of large superannuation funds*, *APRA Insight* Issue Three 2008, at 3.

The extent to which demographics and other factors explain fund-level performance differences is a question that can be addressed with empirical evidence.

This paper seeks to contribute evidence to this question by performing statistical analysis using option-level metrics and fund-level metrics to address the two principal issues raised by retail superannuation funds and APRA's 2017 publication.

1. We examine the degree to which member demographics and product mix/risk preference explain retail super fund average underperformance using three tests.
 - First, we compare industry super fund pension options against retail super fund pension options across all categories of options established by SuperRatings, an independent ratings agency (diversified as well as single asset class options).¹⁹ This means, for example, we compare the performance of industry super fund balanced pension options against retail super fund balanced pension options; industry super fund Australian equities pension options against retail super fund Australian equities pension options; industry super fund cash pension options against retail super fund cash pension options; and so on. This analysis controls for both demographics (because only pension options are considered) and risk preference (because investment strategies are segmented and compared on a like-for-like basis).
 - Second, we compare industry super fund accumulation options against retail super fund accumulation options across all categories of options established by SuperRatings.
 - Third, we update the analysis performed by APRA in 2008 which compares the demographics and performance of retail super funds to public sector super funds.
2. We analyse the degree to which option-level returns and fund-level returns are related. Retail super funds have argued that fund-level return comparisons are not meaningful because option-level returns are what determine member outcomes. However, the strength of this argument depends in part on the extent to which fund-level returns and option-level returns are related. If fund-level returns are strongly correlated with option-level returns, member outcomes can be predicted with a high degree of accuracy by either. We examine the degree to which differences in fund-level net returns are correlated with differences in option-level returns over the short, medium and long term by performing correlation and regression analysis of option-level returns reported by SuperRatings and fund-level net returns published by APRA.

¹⁹ The categories of diversified investment option strategies are: (i) *Secure* (options in this category have between 0-19% growth assets); (ii) *Capital Stable* (options in this category have 20-40% growth assets); (iii) *Conservative Balanced* (options in this category have 41-59% growth assets); (iv) *Balanced* (options in this category have 60-76% growth assets); (vi) *Growth* (options in this category have 77-90% growth assets); and (vii) *High Growth* (options in this category have 91-100% growth assets).

The categories of single asset class strategies are: (i) *Australian Shares*; (ii) *Cash*; (iii) *Diversified Fixed Interest*; (iv) *International Shares*; and (v) *Property*.

The findings are summarised below, and described in greater detail in the body of this paper:

- We do not find empirical support for the proposition that member demographics, product mix, or risk preference explain lower average performance by retail super funds.
 - Comparing only pension options of a similar strategy, to ensure similar member demographics and product risk profiles, industry super fund pension options consistently achieved higher median and mean performance compared to retail super fund pension options. (Section 1.2, particularly Figure 1).
- Some of the results are especially striking. For example, the *bottom quartile* of industry super fund cash pension option returns begins at a point *greater than or equal to* the beginning of the *top quartile* of retail fund cash pension options returns for the one, five and ten-year periods to June 2016. Over ten years, the worst performing industry super fund cash pension option outperformed more than 75 per cent of retail super fund cash pension options (Figure 2).
- Comparing only accumulation options of a similar investment strategy, industry super fund accumulation options achieved higher median performance compared to retail super fund options. (Section 1.4, particularly Figure 5).
 - Public sector funds have an older demographic than retail super funds, but also have higher average levels of performance than do retail super funds. Public sector funds have a higher proportion of members aged 50-59, aged 60-64, and aged 65 and over, than do retail super funds. Public sector funds have comparable levels of average performance to industry super funds notwithstanding that they have much older demographics than industry super funds. (Section 1.5)
- Our analysis shows, consistent with APRA’s finding in 2008, that fund-level and option-level returns are related. In fact, fund-level rates of return are strongly correlated with option-level returns. (Section 2.2)
 - Long term fund-level net returns are very strongly correlated with the long term net returns of the largest option of a fund. The Pearson correlation between the largest option and the ten year fund performance is .963 – a very strong relationship, and regression analysis indicates 92.5 per cent of the variance in performance of the largest option is explained by overall ten year fund performance (adjusted R-squared) (Figure 7). In simple terms, this result means that if a superannuation fund has relatively high net returns, then its largest option is very likely to have relatively high net returns, and vice-versa. To the extent that a fund’s largest option is utilised by a large percentage of its membership and reflects a large percentage of its assets, fund-level analysis will be reasonably informative to its members.
 - We performed robustness tests on the finding that fund-level returns are correlated to the returns of the largest option. Specifically:
 - > It is possible that the largest option of a fund might represent a relatively small number of the fund’s members, a small percentage of its assets, or differ materially from other options,²⁰ raising the question of whether other options similarly are correlated with fund-level rates of return. It is also possible that fund members will be exposed to multiple options offered by a fund. To investigate these possibilities, we analysed the relationship between fund-level returns and aggregate option-level returns. This analysis is presented in the body of the paper in Section 2.2.2. Again, fund-level rates of return are very strongly correlated with aggregate option-level returns, with a Pearson correlation of .953. In simple terms, this result means that if a

²⁰ APRA noted that there could be significant variations in “the relative size of various investment options within each RSE, the relative underlying differences in the allocation to equity and property investments for each option and the proportion of assets that relate to pension accounts.” APRA (2017), *APRA Insight* Issue Two 2017.

superannuation fund has relatively high net returns, that it is highly likely that the performance of its options as a group have relatively high net returns, and vice-versa.

- > It is possible that a fund's largest option and the aggregated option returns could be dominated by balanced or diversified options, and therefore that fund-level returns would not be predictive of option-level returns where the option's investment strategy or style differs significantly from a balanced option. To address this possibility, we analysed the relationship between fund-level returns and the returns of cash options. This analysis is presented in the body of the paper at Section 2.2.3. Again, fund-level information is informative even in respect of cash option returns, with a Pearson correlation between the 10 year APRA fund-level return and the 10 year cash option return of .694. In simple terms, this means that if a superannuation fund has relatively high net returns, then its cash option is more likely than not to have high returns compared to other cash options, and vice versa.

We remind readers of the following admonitions by APRA:

APRA recommends that users of the [fund-level superannuation] statistics exercise caution in analysing and interpreting the reports, particularly while the annual superannuation data collection is still relatively new. ... APRA also notes that performance over the long term is a key determinant of members' retirement outcomes and there is likely to be considerable variability in some data over the short term. In that context, APRA strongly recommends that users of the statistics exercise caution in making assessments or drawing conclusions based on short-term information.²¹

The category of APRA statistical data contributing to the analyses in this research, namely the fund-level performance data, has been collected for a long time; it is not a new collection. In addition, this research and its conclusions focus on 10 year data; analysis based on shorter time periods are provided in the appendix for completeness and to demonstrate that the nature of the results are comparable across time periods.

The Pearson correlation

This paper uses Pearson correlation coefficients to address the question of whether fund-level returns and option-level returns are related.

The Pearson correlation coefficient is a measure of the degree to which two continuous variables are linearly related. The Pearson correlation coefficient is the most commonly used measure of association between two variables. Values range from -1 (a perfect negative relationship) through 0 (no linear association) to +1 (a perfect positive relationship). Deborah J Rumsey in *Statistics for Dummies* rates anything from .70 to .99 as a strong relationship. In this paper we use .70 to .79 as "fairly strong", .80 to .89 as "strong" and .90 to .99 as "very strong".

²¹ APRA (2018), 'Using the published data', *Annual Fund-level Superannuation Statistics*, <http://www.apra.gov.au/Super/Publications/Pages/superannuation-fund-level-publications.aspx>

R-Squared and Adjusted R-Squared

In a two variable regression, R-squared is the proportion of the variance in the dependent variable (y values) that is accounted for by the independent or explanatory variables (the x values).

The three measures of variation in a regression equation are the total sum of squares (SS_{tot}), the regression sum of squares (SS_{reg}), and the residual sum of squares (SS_{res}).

$$R^2 = 1 - SS_{res} / SS_{tot} = SS_{reg} / SS_{tot}$$

Computationally, r-squared is the square of the Pearson correlation coefficient.

Adjusted r-squared adjusts the measure of R-squared for the number of explanatory variables in the regression equation. This prevents the size of R-squared increasing merely from the use of more explanatory variables. The other important feature for the current analysis is that, for a sample, adjusted r-squared provides an unbiased estimate of the population R-squared.

In simple terms, a high adjusted r-squared indicates that observed differences or variations are explained by the independent variable or variables. In this research paper, a high adjusted r-squared indicates that the performance of a superannuation fund would be said, by a statistician, to 'explain' or to 'predict' a substantial amount of the performance of the fund's option being analysed.

1. Do demographics and risk preference explain retail superannuation fund underperformance?

The assertion that demographics and risk preference are major factors underlying the average underperformance of retail superannuation funds is a question that can be addressed by empirical evidence.

If it is true that retail superannuation funds underperform industry super funds on average because retail superannuation funds tend to have an older demographic with a lower risk preference, then retail super fund pension options across investment strategies with different levels of risk should have comparable performance to industry super fund pension options with substantially the same investment strategies. This is because pension options necessarily have substantially the same demographic profile and because options with the same investment strategies should have substantially similar risk profiles.

In addition, if it is true that retail superannuation funds have lower fund-level asset allocation to growth assets and this drives lower fund-level average performance, then retail superannuation fund accumulation options following different investment strategies with different levels of risk should have comparable performance to industry super fund accumulation options following substantially the same investment strategies and levels of risk.

If, however, retail superannuation funds have lower average performance compared to industry super funds due to other factors, including but not limited to their business objectives, trustee structure, and operating model, then the retail superannuation fund pension and accumulation options would tend to underperform industry superannuation fund pension and accumulation options of a similar investment style or strategy.

To test these hypotheses, this analysis compares (i) industry super fund pension options against retail super fund pension options of similar investment strategy or style; and (ii) industry super fund accumulation options against retail super fund accumulation options of similar style, based on SuperRatings option performance data for the ten years to June 2017.

The pension option comparison is of particular interest because it controls for both demographic differences and risk preference differences.

1.1 Methodology

The analysis in Sections 1.2 and 1.4 follows SuperRatings' own practice of using unweighted medians to show central tendency. Analysis using unweighted medians does not require consideration of the value of option assets, therefore preserving records in the sample.

To demonstrate the robustness of the SuperRatings approach, and for completeness, we have also performed the analysis on an asset-weighted basis and analysed the distribution of performance results for each investment option strategy. The results for weighted medians are very similar to the unweighted options.

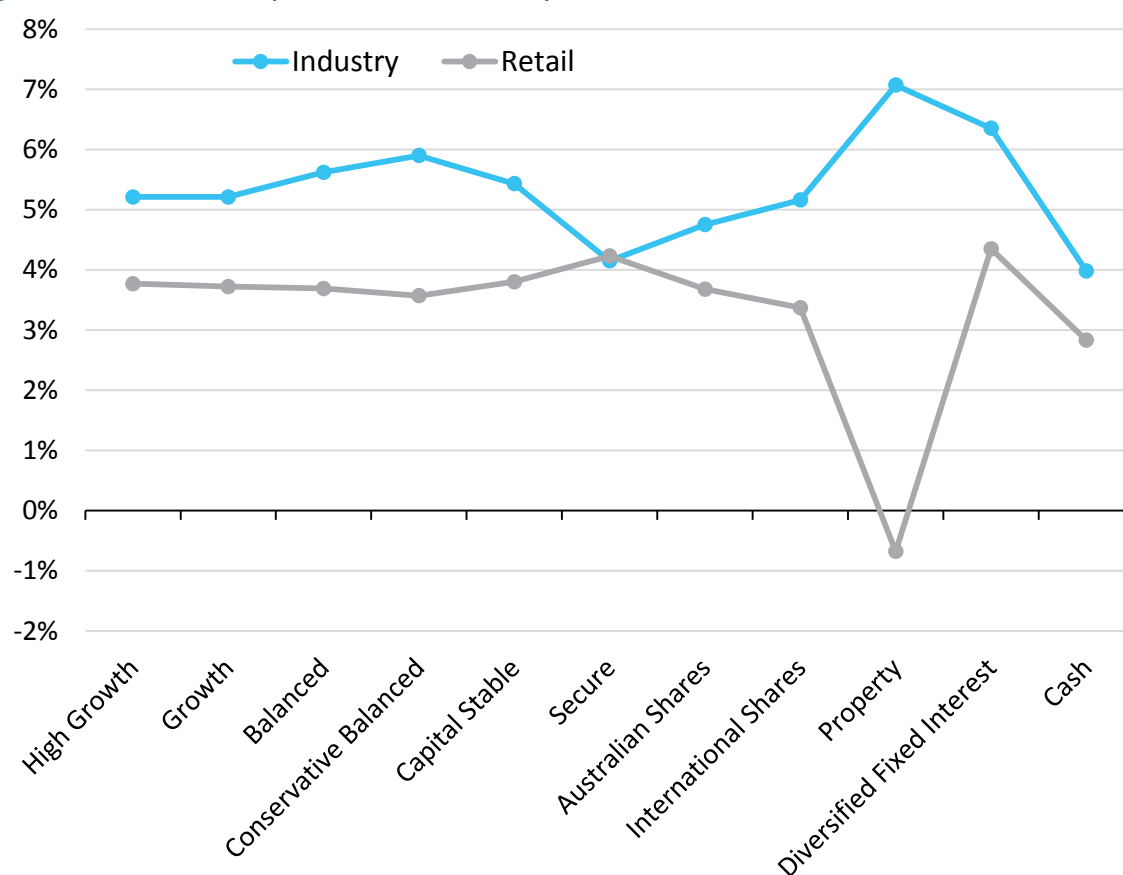
The analysis of the distribution of performance within each option strategy is of particular interest. Section 1.3 provides several comparisons of the distribution of performance (i.e., the maximum, top quartile, median, mean, bottom quartile and minimum) by option style. These analyses demonstrate not only that the unweighted median results are not an artefact of the methodology but that, in general, the median differences understate the relative performance gap between retail and industry fund option-level performance.

1.2 Pension option performance by option type

Figure 1 shows the unweighted median performance of industry super fund pension options compared to retail super fund pension options of the same style.

This comparison tests whether industry super fund outperformance at the fund level is also present at the like-for-like option level, which is relevant to the question of whether demographics and risk preference drive the difference in fund-level performance between retail superannuation funds and industry superannuation funds.

Figure 1 – Pension option median ten year returns



Source: SuperRatings (2017), ISA analysis

Industry super fund options outperform retail super fund options in every pension investment option style over the last ten years other than 'secure'. As shown in Appendix 1, this pattern of outperformance across option styles is also present in the five-year and one-year periods: of 33 observations (11 option styles over three time periods (one-year, five-year and 10 year)) industry super fund median performance is higher than the median performance of comparable retail super fund options in 29 instances and equivalent in one instance.

This phenomenon is not an artefact of comparing median returns rather than average returns. As discussed in the next section, comparing the performance of options by investment style using box-and-whisker plots indicates that industry super fund pension options outperform retail fund pension options across the distribution on a like-for-like basis.

1.3 Distribution of pension option performance by investment strategy

The analysis in this section compares the distribution of pension option performance by investment strategy, to demonstrate that the findings in Figure 1 are not an artefact of comparing medians.

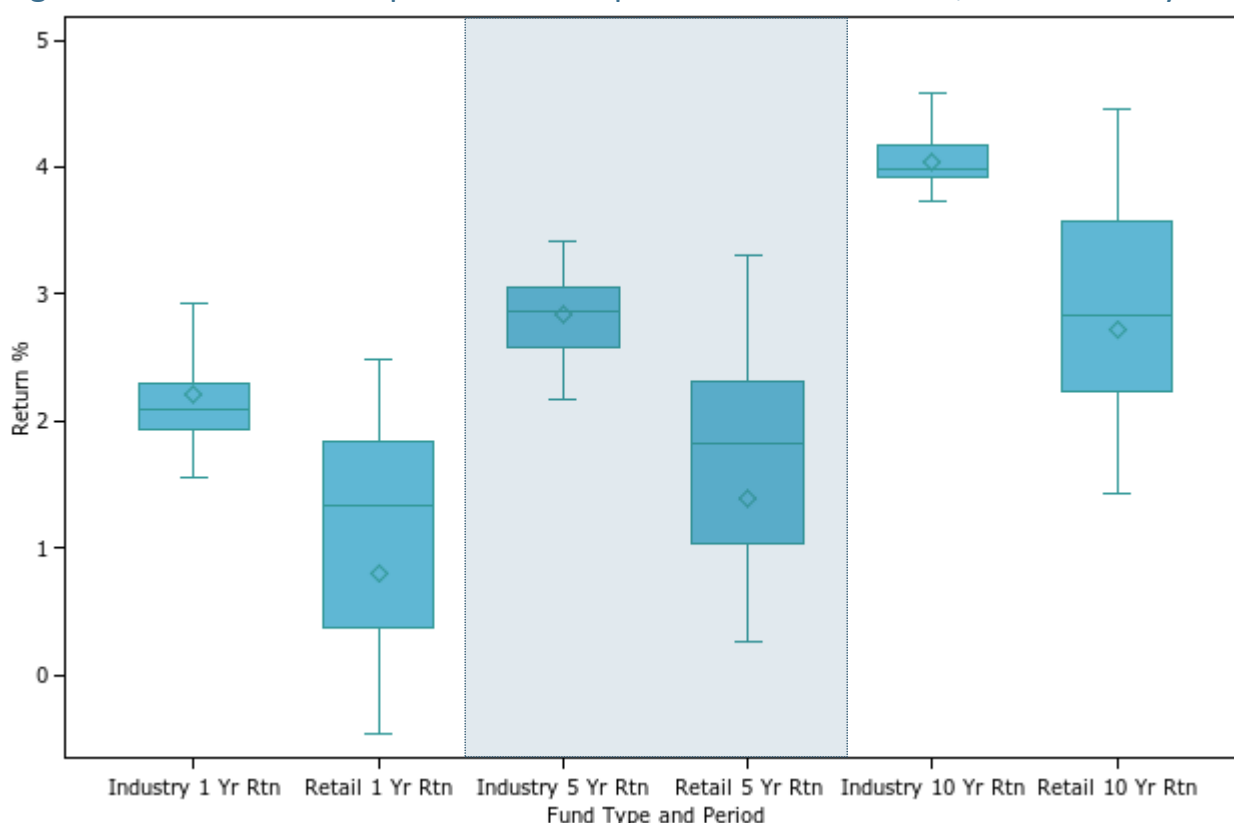
Distributions are often summarised using box and whisker plots. In the following box and whisker plots:

- The box goes from the 25th to the 75th percentile of returns – the interquartile range;
- The line around the middle of the box is the unweighted median;
- The diamond near the median line is the weighted mean;
- The top whisker is the maximum; and
- The bottom whisker is the minimum.

Figure 2 compares the performance of industry super fund cash pension options to retail super fund cash pension options, showing the distribution of performance of these options. Figure 2 shows that the 25th percentile of industry fund cash pension option returns is above or equal to the 75th percentile of retail fund cash pension option returns for one, five and ten year periods to June 2017.

Since this is a pension option, with restricted membership eligibility,²² the potential for demographic differences in the membership is substantially eliminated. There also can be no material difference in risk level since the option is cash.

Figure 2 – Distribution of pension cash option returns over one, five and ten years

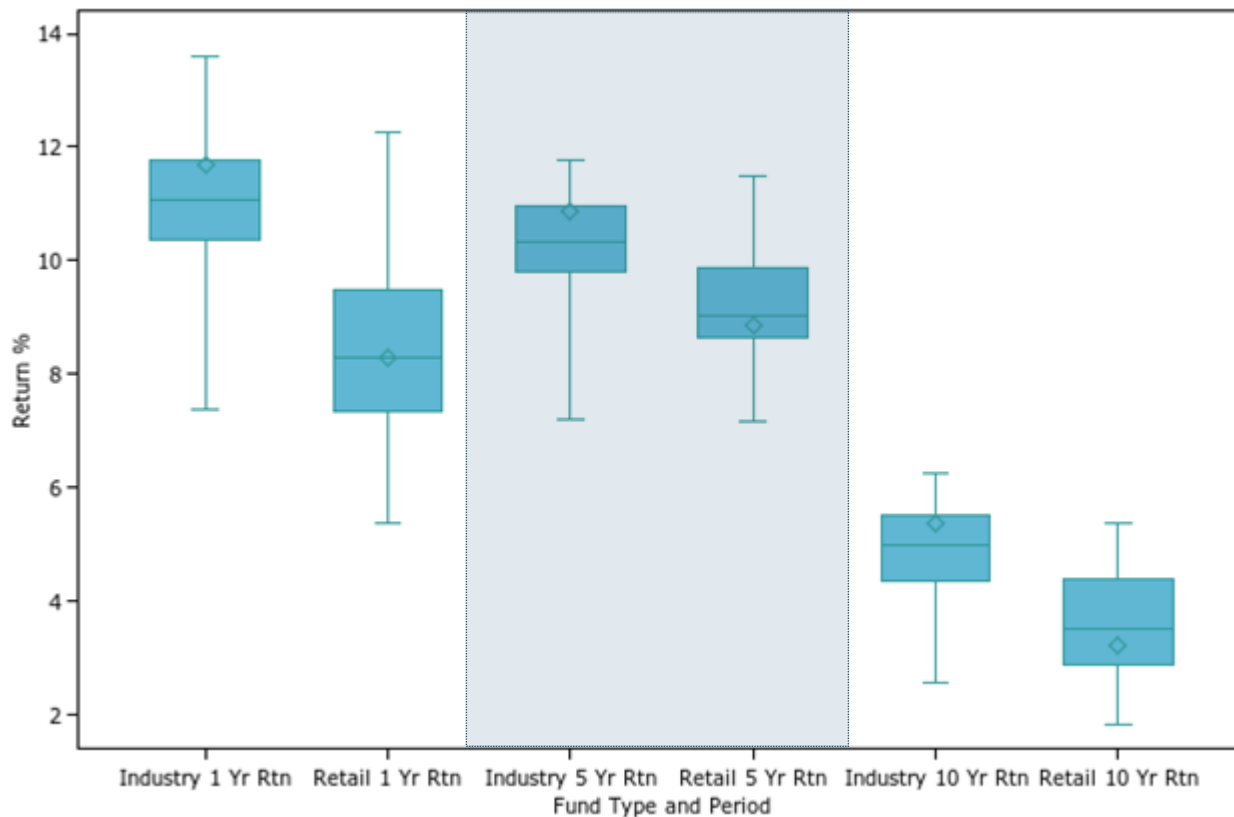


Source: SuperRatings (2017), ISA analysis

²² Eligibility to choose a pension option is limited to those who are retired or transitioning to retirement and are above certain age thresholds (there are differences in practice among providers that are not material to this research, such as that some providers permit members who are totally and permanently disabled to be eligible). Pension options are also typically subject to minimum investment requirements.

Figure 3 compares the performance of industry super fund balanced pension options against retail super fund balanced pension options, showing the distribution of performance of these options. Industry super fund balanced pension options outperform retail super fund balanced pension options on average and on a quantile-by-quantile basis.

Figure 3 –Distribution of pension balanced option returns over one, five and ten years

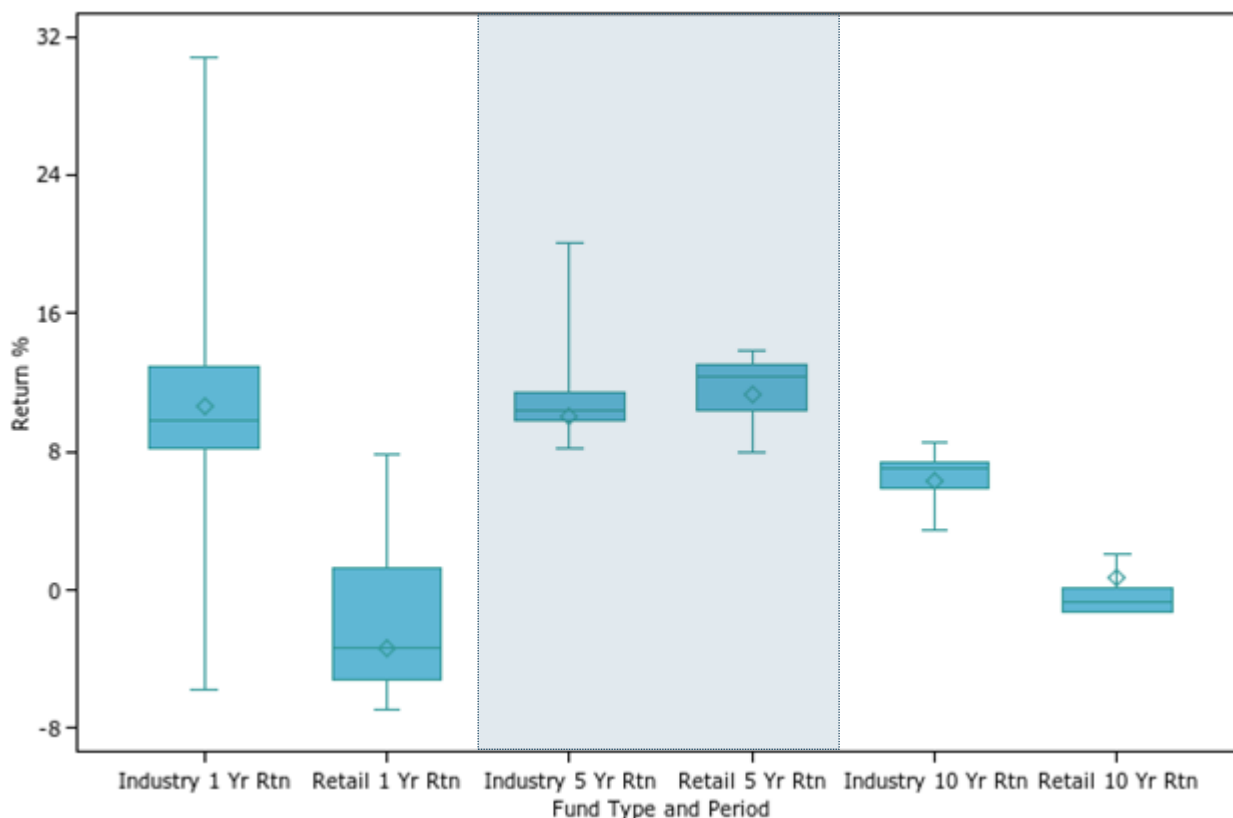


Source: SuperRatings (2017), ISA analysis

All other categories of pension options – whether premixed options or single asset class strategies – have a similar pattern in which industry super fund pension options outperform retail super fund pension options on average over one year, five years, and ten years, except for one asset class in one time period. We present this exception for completeness.

Figure 4 compares the performance of industry super fund pension options focused on investing in property against retail super fund pension options focused on investing in property, showing the distribution of performance of these options. This figure shows that the performance of retail super fund pension options investing in property over five years is higher on average than industry super fund pension options investing in property over that period. Retail super fund pension options investing in property underperform industry super fund pension options investing in property over ten years and one year.

Figure 4 –Distribution of property pension option returns over one, five and ten Years



Source: SuperRatings (2017), ISA analysis

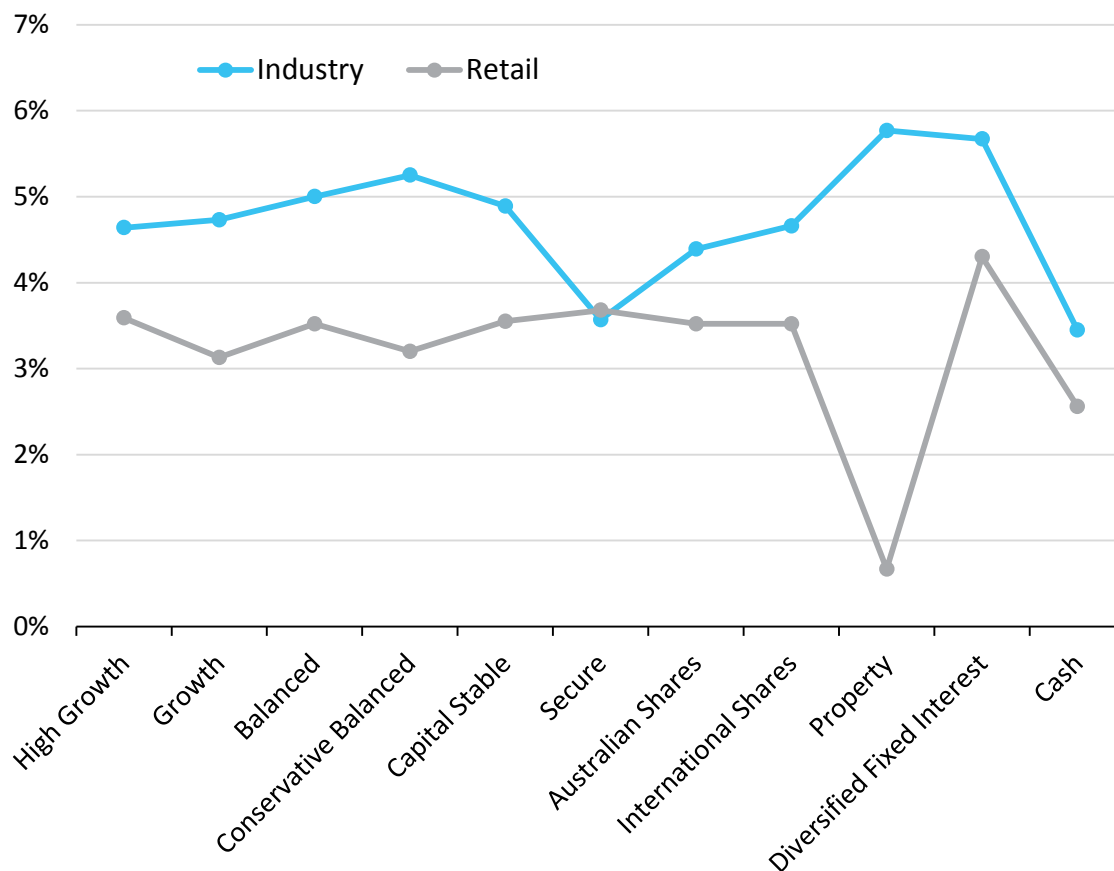
1.4 Accumulation option performance by option type

Industry super fund and retail super fund accumulation options do have different demographic profiles, with retail super funds tending to have a larger proportion of older members closer to retirement. However, the expected volatility or risk of investment options of the same type is similar. SuperRatings have carefully structured their option types to reflect the percentage of growth assets, and therefore risk expressed as volatility. As a result, if industry super fund options have higher median performance than retail super fund options of the same type, this would be evidence against the hypothesis that member risk preferences are the reason retail super funds have lower average performance compared to industry super funds.

Figure 5 compares the performance of industry super fund accumulation options to retail super fund accumulation options by option category. Over the ten years to 2017, industry super funds' accumulation

options have higher median performance than retail super funds in every investment option type other than 'secure'.

Figure 5 – Accumulation option median ten year returns



Source: SuperRatings (2017), ISA analysis

As shown in Appendix 1, this pattern of outperformance across option styles is also present in the five-year and one-year periods: of 33 observations (11 option styles over three time periods (one-year, five-year and 10 year)) industry super fund median performance is higher than the median performance of comparable retail super fund accumulation options in 28 instances – their performance is equal on three comparisons, and the industry super fund performance is lower than comparable retail options in two circumstances, namely five year returns on international shares and property.

1.5 Public sector super fund demographics and performance

In 2008, retail super funds challenged APRA's use of fund-level performance comparisons by suggesting that retail super fund members are older than the average industry super fund member, and that this demographic difference could explain the difference in fund-level performance.²³

In response, APRA found the claims of retail super funds to be "empirically unsupported"²⁴ because:

When we compare industry funds to corporate and public sector funds ... corporate and public sector [returns on assets] were statistically indistinguishable, somewhat higher than industry funds, and

²³ See, the materials referenced in footnotes 3 and 6.

²⁴ APRA (2008), *A Response to Review of APRA's Investment Performance Statistics of the Australian Superannuation Industry*, at 10.

considerably higher than retail funds. Yet corporate and public sector member profiles are considerably older than is the case for industry funds. Public sector age profiles are in fact similar to retail funds. It is not at all apparent from the data that member age profile is driving [returns on assets].²⁵

We have updated the analysis APRA published in 2008. Specifically, we have (i) analysed the demographic profile of public sector super funds relative to other kinds of APRA-regulated super funds to determine whether public sector funds continue to have an older demographic profile than retail super funds; and (ii) analysed the relative performance of public sector funds and retail funds to determine whether public sector funds continue to outperform retail super funds and perform similarly to industry super funds.

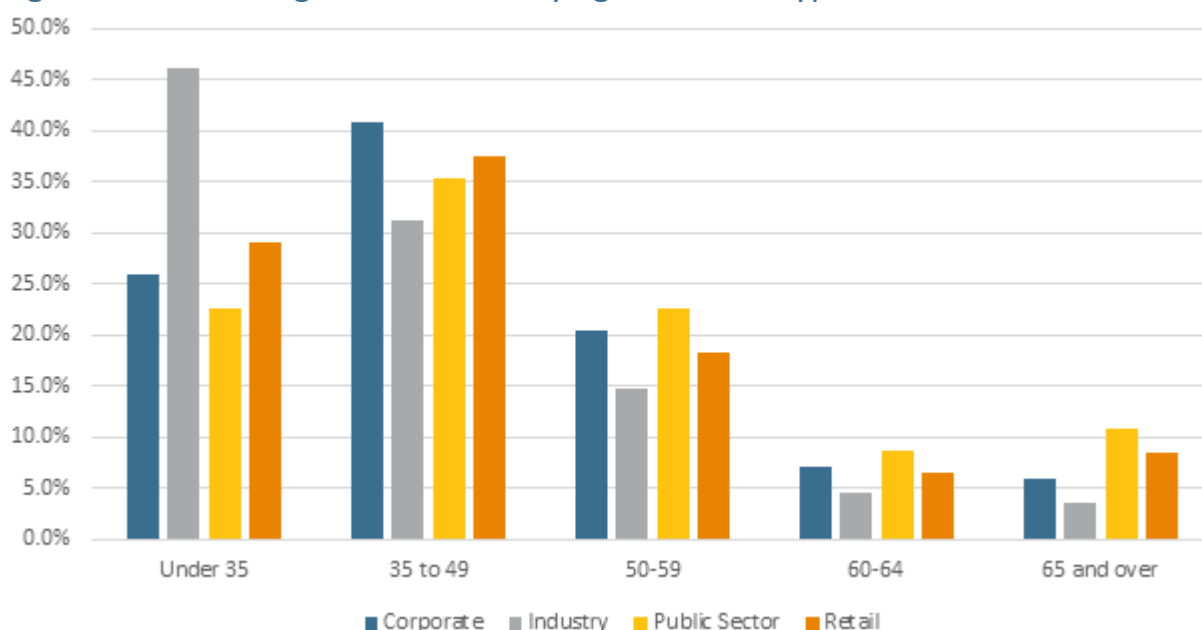
We find that the membership of public sector funds consists of a higher proportion of members approaching retirement and in retirement than do retail super funds. As shown below in Figure 6, approximately 11% of the members of public sector funds are over 65, and an additional approximately 9% of members in such funds are between 60 and 64. By contrast, about 9% of retail super fund members are over 65 and an additional 6% are between 60 and 64. Less than 5% of industry super fund members are between 60 and 64, and only about 3% of industry super fund members are older than 65. Nonetheless, the ten year average annualised rate of return to 2016 for public sector funds and industry super funds are substantially identical, at 5.4%.²⁶

These findings tend to suggest that an older membership base is not the reason that retail superannuation funds underperform industry superannuation funds and other not-for-profit funds. Instead, they suggest that the not-for-profit model of superannuation – which is shared by industry super funds and public sector super funds – may be the characteristic responsible for higher levels of performance on average compared to retail super funds.

²⁵ Id.

²⁶ APRA (2016), *Annual Statistical Bulletin* June 2016.

Figure 6 – Percentage of members by age and fund type



Source: APRA (2016), ISA analysis

2. Are fund-level rates of return informative regarding the outcomes achieved for members?

This section of the paper uses SuperRatings option data matched to APRA fund data up to June 2016 to assess whether fund-level rates of return are correlated with option returns and consequently member outcomes.

Three methods are used to demonstrate the extent to which fund performance is correlated with option performance.

- Firstly, APRA fund level-data is matched with and compared to the performance of the largest option in each fund as measured by SuperRatings (the “largest option analysis”).
- Second, APRA fund level-data is matched with and compared to the performance of SuperRatings option data (the “aggregate options analysis”).
- Thirdly, cash option returns from SuperRatings are matched to and compared with their fund returns (the “cash option analysis”).

As shown in this analysis, there is a strong relationship between fund-level and option-level performance.

2.1 Methodology

2.1.1 Matching options to funds

SuperRatings provided three raw datasets on rated product and investment option performance for the ten years up to 30 June 2016. APRA performance information comes from Table 2 of the APRA *Annual Fund-level Superannuation Statistics Report: June 2016 edition* (issued 1 February 2017).

The SuperRatings datasets provide detail on:

- 3668 Choice (Accumulation) investment options;
- 261 MySuper investment options; and
- 2862 Pension investment options.

The raw data provided by SuperRatings understandably included multiple instances of the same option (the same option can occur in more than one SuperRatings category of products offered by a fund). For the purpose of the analysis, the raw datasets were refined to remove multiple instances of the same option. To do this, the approach within each of the option datasets was to rank options by asset size and then one-year returns for each superfund ABN. Multiple instances of the same option with identical one-year returns were removed from the sample set. This significantly reduced the options with one year of returns under study to:

- 1606 Choice (Accumulation) investment options;
- 145 MySuper investment options; and
- 1111 Pension investment options.

After combining the three datasets, multiple instances of the same options appearing across the datasets remained. For example, the same option could be present in the MySuper investment options dataset and in the Choice (Accumulation) investment options dataset as a balanced choice option. Matching superfund ABN and first year returns, multiple instances of the same option were removed from the combined data sets.

In total, SuperRatings provided data for 101 of the 219 APRA supervised funds. However, APRA also had funds with no assets or first year returns, reducing the initial matched set to 94 funds.

Performance comparisons over longer periods of time are desirable because short term fluctuations, and the effects of cycles, are reduced.²⁷ As a result, the main comparisons in this paper are based on the 10 years to June 2016. Comparisons based on the one-year and five-years to 2016 are also included in the appendices for those who are interested; the results are substantially similar. However, while comparisons based on long term returns are superior because they reduce potential noise in the performance trends, long term comparisons also reduce the number of funds and options included in the analysis insofar as some funds and products were not in existence for the 10 year period, or otherwise were not in the data collection. The effect of this phenomenon on the largest option analysis is shown in Tables 1 and 2, and the effect on the aggregate options analysis is shown in Table 4.

2.1.2 Determining the largest option (for the Largest Option analysis)

The SuperRatings datasets – comprising (i) Choice (Accumulation); (ii) MySuper; and (iii) Pension products were combined and then sorted by option size within fund ABN. The dataset was then culled such that only the largest option from each fund remained. This produced 100 options. After merging with the APRA fund performance dataset for June 2016, records with no performance data on the APRA side or the SuperRatings side were removed – leaving 91 records with at least one year of performance information from both datasets. There were 52 records with 10 years of performance information from both datasets.

There were 219 APRA funds in the June 2016 performance report. The 91 funds in this analysis were 42% of APRA funds but they had 85% of APRA fund assets. As Table 2 shows, proportions for industry funds were higher – 90% of the number of funds, virtually 100% of APRA assets and the largest options held 60 per cent of industry fund total assets. But retail representation was also good – the 32% of retail funds had

²⁷ See, e.g., footnote 21.

78% of all retail fund assets (excluding eligible rollover funds) and the largest options held 30 per cent of retail fund total assets.

Table 1 - Number of funds and options compared in the Largest Option analysis

	10 year	5 year	1 year
Number of funds contributing to the results	52	74	91
Assets in APRA funds contributing to the results as percentage of APRA assets	75%	83%	85%
Number of largest options in the data set contributing to the results	52	74	91
Assets in SR Options contributing to results as percentage of APRA assets	24%	26%	30%

Source: SuperRatings (2016), APRA, ISA analysis

Table 2 - Largest Option analysis – Proportion of all APRA funds at June 2016

APRA fund type	Proportion of Study Numbers to full APRA Numbers		
	Number of funds	APRA assets	Option assets
Corporate	19%	59%	18%
Industry	90%	100%	60%
Public Sector	47%	78%	30%
Retail	32%	78%	6%
Retail - ERF	0%	0%	0%
All	42%	85%	30%

Source: SuperRatings (2016), APRA, ISA analysis

Balanced funds were heavily represented in the largest option, which is not surprising given the predominance of accumulation assets. Table 3 shows that 68 of the largest options were balanced and they contained 95% of largest option assets in the matched dataset.

Table 3 – Style of largest options

SuperRatings Option Type	Number of Matched Funds	Proportion of APRA assets in the 91 funds	Proportion of Largest Option assets in the 91 funds
Australian Shares	3	1%	0%
Balanced (60-76)	68	89%	95%
Conservative Balanced (41-59)	6	1%	1%
Diversified Fixed Interest	1	1%	0%
Growth (77-90)	10	6%	4%
High Growth (91-100)	3	1%	1%
All	91	100%	100%

Source: SuperRatings (2016), APRA, ISA analysis

2.1.3 Calculating weighted returns (for the Aggregated Options analysis)

Calculation of the weighted average option return for each fund requires the calculation of the ratio of the sum of option returns to the sum of the option assets (ratio of the sums).

The dollar value for each return period for which data was available was calculated. The dollar value of the option returns and assets were aggregated for each separate fund ABN. The ratio of the aggregated returns to assets was calculated to give an option view of the fund rate of return.

This was matched to the APRA fund level data for the ten years to June 2016 by fund ABN.²⁸

Inspection of the fund returns showed that if the aggregate asset value of the options included in the SuperRatings data was less than one-third the fund's total assets according to APRA, there was considerable variability in the relationship between the APRA fund return and the aggregated option return. But even when the measured options had only one-third of total fund assets, the relationship between aggregated option performance and fund rate of return was quite stable and obvious. This suggests that the limited observed variation between fund-level and aggregate option-level performance would likely reduce if the option-level data were more complete.

Table 4 shows the number of funds and the share of assets contributing to the results for the three return periods. Option assets contributing to results were 53% of all APRA assets for one year returns, compared to 30% for the largest option study.

Table 4 - Number of funds and options compared in the Aggregated Options analysis

	10 year	5 year	1 year
Number of funds contributing to the results	55	60	66
Assets in APRA funds contributing to the results as percentage of APRA assets	58%	66%	68%
Assets in SR Options contributing to results as percentage of APRA assets	46%	51%	53%

Source: SuperRatings (2016), APRA, ISA analysis

2.1.4 Calculating cash option returns

It is possible that the largest option and the aggregated option returns will be dominated by balanced options, and therefore fund level returns would not be correlated with option level returns that differ significantly in style from a balanced option. To investigate this possibility, we assessed the correlation of fund-level returns with cash option returns.

This analysis is based on all cash options in the combined SuperRatings dataset. Each of the 204 cash options in the SuperRatings data were matched to the relevant APRA fund. One fund can have multiple cash options in their accumulation and pension offerings, and the APRA data for the fund could be matched several times. A fund's cash options were not aggregated as this is unnecessary to run this analysis, insofar as the focus is on the informativeness of APRA fund-level data in respect of differences in option performance.

As in the prior analyses, options for which there was no performance data on either the SuperRatings side or APRA side were not included. Of the 204 cash options, 20 did not have such performance information.

²⁸ Comparisons of the one year to June 2016 and five years to 2016 are available in Appendix 1: the one- and five-year comparisons have similar results. These comparisons include a higher number of funds and options for which product data is available, with obviously less data available about long term relationships.

In addition, very small cash options (i.e., under \$20 million in assets) were excluded to reduce noise, resulting in 105 cash options for purposes of the study.

2.2 Results

2.2.1 The relationship between fund performance and largest option performance

This analysis compares APRA fund-level performance with the performance of the largest option in each fund as measured by SuperRatings.

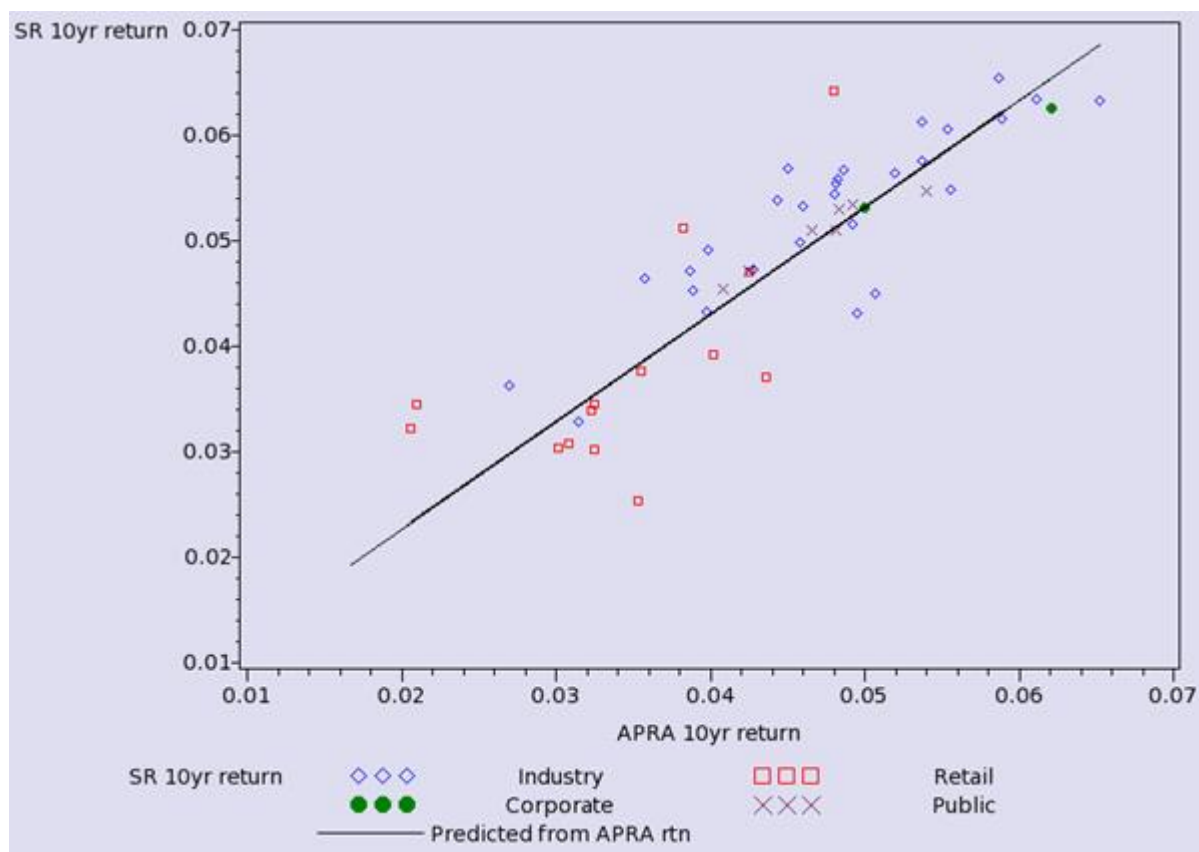
If there is a strong relationship between the relative performance of the largest option and the fund itself, then fund-level performance is useful information in connection with product-level decision making. The largest option offered by a fund is the product likely to have the most members in it.

As shown in Figure 7, there is a very strong linear relationship between the APRA ten year performance estimate and the SuperRatings performance estimate for the largest option.

The Pearson correlation between the largest option and the ten year fund performance is .963 – a very strong relationship. The simple regression shows that 92.5 per cent of the variance in performance of the largest option is explained by overall ten year fund performance (adjusted R-squared).

The chart shows that the relationship is stronger for industry funds. Retail funds show greater variability in largest option outcomes for a given ten year performance. Nonetheless, the relationship between the performance of retail funds and the largest option of retail funds is strong, with a .854 correlation.

Figure 7 – Distribution of APRA fund-level returns and largest option returns



Source: SuperRatings (2016), APRA, ISA analysis

Note: The black line is the regression line of the predicted aggregated option return based on the APRA return.

2.2.2 The relationship between fund performance and aggregate option performance

It is possible that the largest option of a fund might represent a relatively small proportion of a fund's members or assets,²⁹ and therefore it is possible that the performance of other options might not be correlated with fund-level rates of return.

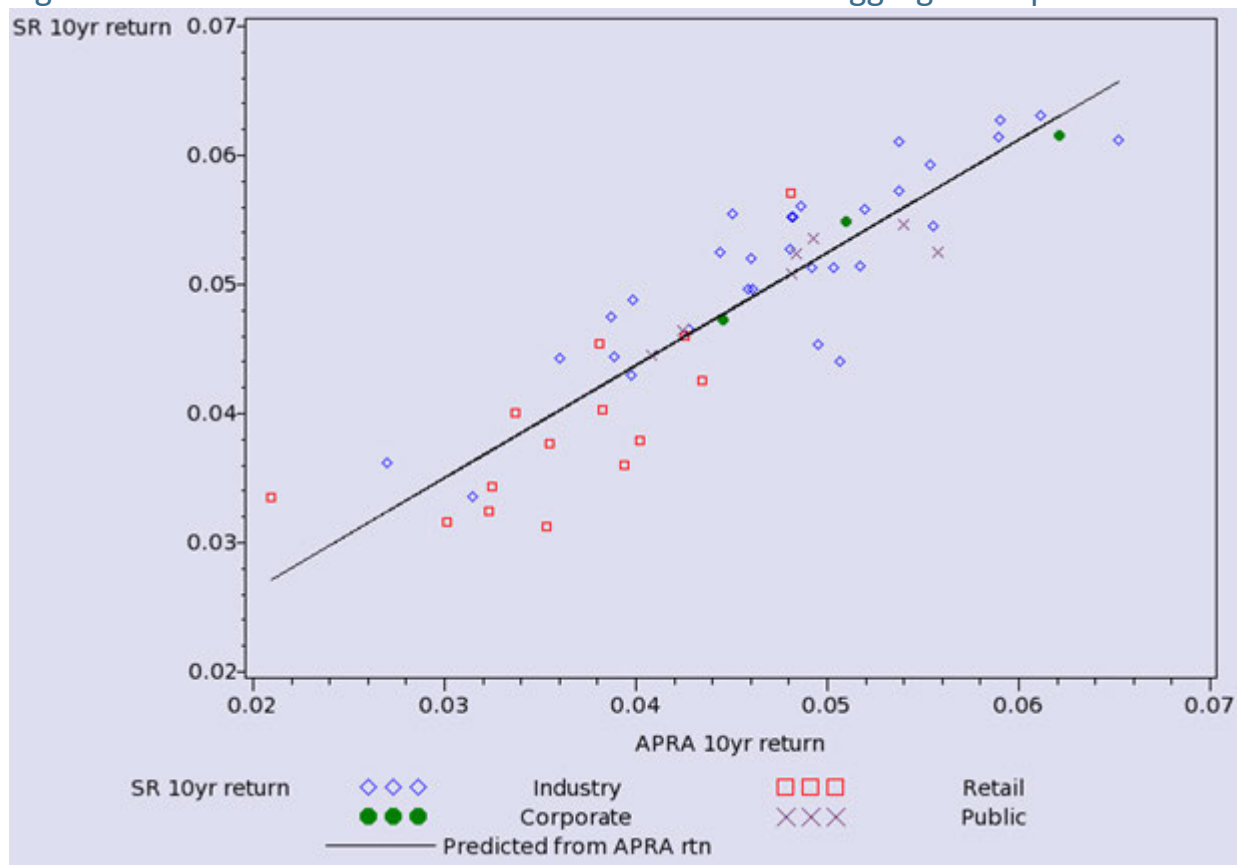
To investigate this possibility, we compared the fund-level returns against the performance of the aggregate of a fund's options. Figure 8 shows the very strong correlation between the aggregated option-level returns and the fund-level rates of return.

The asset weighted Pearson correlation between the aggregated option returns and the APRA return was .953. The simple regression of the two variables showed that the APRA fund rate of return accounted for 90.7 per cent of the variance in aggregated option return (adjusted R-Squared). Statistics are significant at the one in ten thousand level compared to the null hypothesis of no relationship.

In simple terms, this result means that knowing the ten year APRA fund return provides a very good guide to differences in the aggregated ten-year option returns for APRA regulated funds.

²⁹ See, footnote 14, above.

Figure 8 – Distribution of APRA fund-level returns and aggregated option returns



Source: SuperRatings (2016), APRA, ISA analysis

Note: The black line is the regression line of the predicted aggregated option return based on the APRA return.

2.2.3 The relationship between fund performance and cash option performance

Not all options are balanced options or multi-asset class options. This raises the question of whether fund-level returns are correlated with option-level returns for options that are single asset class. To investigate this question, we analysed the relationship between fund-level rates of return and cash option rates of return.

Figure 9 shows the relationship between 10-year fund-level performance reported by APRA and the performance of cash options in the SuperRatings dataset over that period.

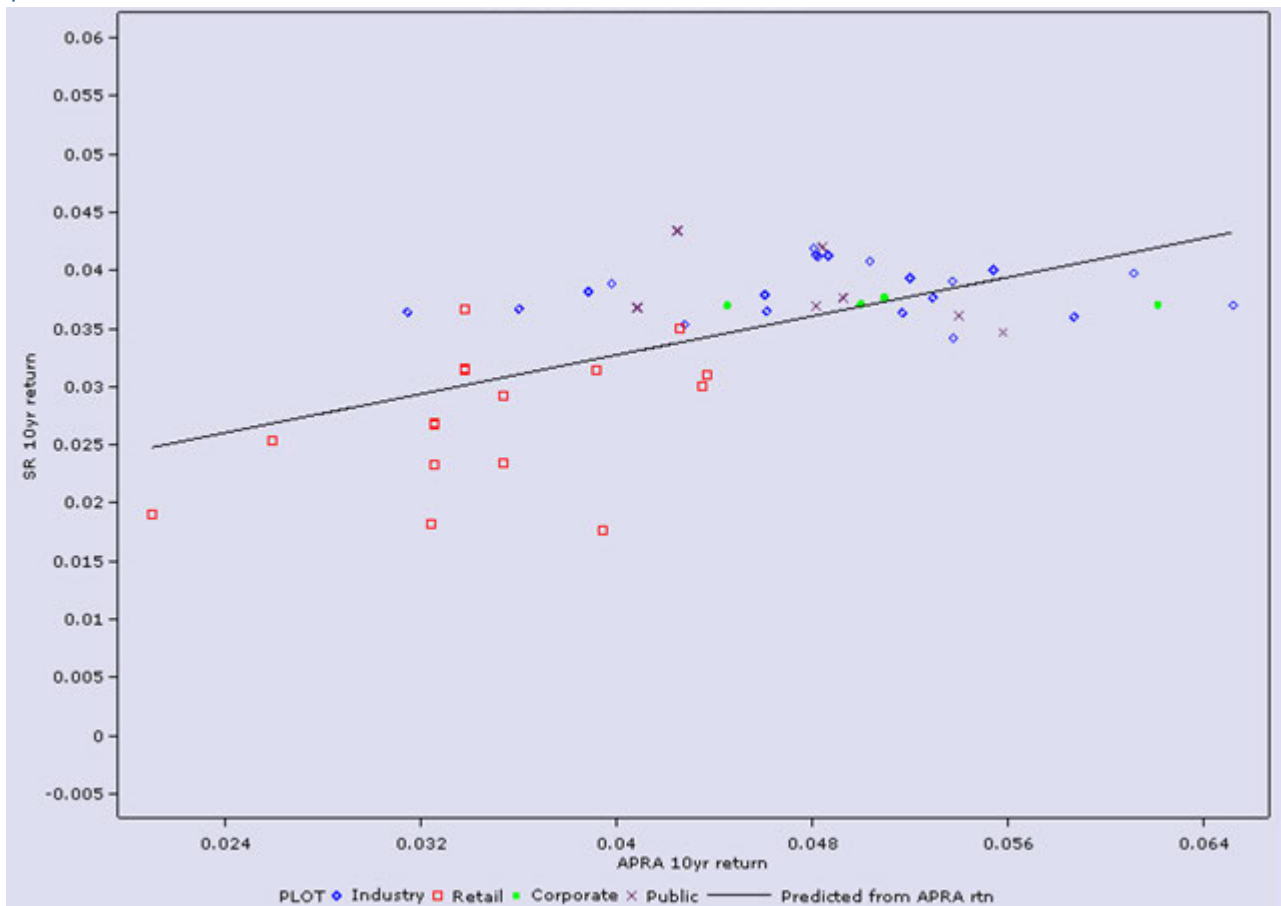
There is a clear positive linear relationship between fund-level performance and cash option performance.

We also find a clear positive relationship between being a not-for-profit fund and having superior cash option performance.

The simple linear Pearson correlation between the 10-year APRA return and the 10-year cash option return was .694. The Pearson correlation between being a not-for-profit fund and the 10-year cash return was .719. The multiple correlation of not-for-profit status and APRA 10-year returns on cash option returns was .814.

Once again, overall APRA fund-level performance is a reasonable guide to 10-year returns for cash options. Knowing the APRA return and the APRA fund type materially improves the ability to predict higher cash returns. The APRA-10 year fund-level rate of return accounts for 47% of the variance in cash option 10 year returns, based on the simple regression of the two variables. The APRA fund-level rate of return and not-for-profit status together accounted for 65% of the variance in 10 year cash option returns.

Figure 9 – Distribution of APRA fund-level returns and the returns of cash options of \$20 million or more in assets



Source: SuperRatings (2016), APRA, ISA analysis

Note: The black line is the regression line of the predicted aggregated option return based on the APRA return.

3. Discussion and conclusion

Retail superannuation funds have criticised the use of fund-level performance data to compare different categories of funds, particularly retail superannuation funds and industry superannuation funds. In its 2017 bulletin, APRA suggests that it may be exhibiting more caution in relation to fund-level performance comparisons, because of what APRA describes as a significant difference between registrable superannuation entity structures which reflects a number of factors, including underlying demographic differences and the proportion of assets held in different investment options.

We have comprehensively analysed the option-level performance of industry super funds and retail super funds, controlling for demographics and investment strategy at the option level. We found that the superior performance of industry super funds at the fund level is substantially replicated at the option level.

We comprehensively analysed the statistical relationship between fund-level returns and option-level returns and found that fund-level returns are highly informative in respect of option-level returns.

While these empirical findings are important, they are not the only reasons that fund-level rates of return published by APRA are useful for analytical purposes and to better understand the superannuation system.

Other reasons include:

1. *If only option-level data were used for comparisons, the public interest in evaluation of the superannuation system and super funds would be substantially impaired.*

Option-level data is not audited and not publicly available for free.

Performance data for individual options are reported by commercial research houses, and despite their efforts, such data are subject to the effects of survivorship bias, voluntary collections, the transient features of the products, and inconsistent practices across the houses in respect of inclusions of tax and other costs.

If only option-level data were used for comparisons, it would be many years at least before a data set of reasonable depth and duration could be developed.

2. *Fund-level data is relevant to assessing the quality of a trustee, and the quality of a trustee is important to member outcomes.*

The trustee is responsible for the development and execution of a super fund's strategy. The trustee determines what products are offered, how they are offered, and to whom. Trustees can change terms and conditions of products over time. Trustees are responsible for initial and ongoing asset allocation, manager selection, and the provision of a range of services (either directly or through third parties). For superannuation members, the future is uncertain and their outcomes are shaped in large part by trustee decisions before a member joins a product, and thereafter. Information asymmetry is significant in superannuation. It is difficult for members to monitor trustee decisions and product features on an ongoing basis. As a result of all of these factors, there is substantial scope for trustees to generate value for members, on the one hand, or extract value from members, on the other hand. The scope of trustee discretion is substantial, and long term fund-level rates of return can be informative in respect of the loyalty, competence and diligence of a trustee across the fund's operations in respect of all members and products.

In 2008, APRA stated that "The Sole Purpose Test and the trustee's Section 52 duties under SIS [the Superannuation Industry (Supervision) Act] strongly suggest that a trustee should operate a superannuation fund in a manner which is aimed at delivering good long term returns to members, with return aspirations constrained by the need to manage investment and purchasing power risk over the

longer term. In this context, examining realized fund returns over time allows an observer to draw an inference about a trustee's ability to construct and execute a strategy which is in the members' best interest. Accordingly, APRA considers longer term fund returns a highly relevant though not definitive indicator of superannuation trustee performance in designing and delivering an investment strategy which is in the members' best interest."³⁰

APRA's 2017 bulletin discussing fund-level performance was silent on the responsibility of the trustee for establishing fund-level strategies and the relevance of this responsibility to member outcomes. The establishment and monitoring of distribution models of funds, and consequent member choice outcomes, is the responsibility of the trustee. If public sector super funds with an older demographic can on average provide relatively high long term financial performance for members, but retail super funds on average provide lower financial performance, scrutiny by regulators and policy makers may be warranted in respect of retail fund trustee strategies, including the retail distribution model, to the extent it contributes to those member choice outcomes.

3. *As observed by the Productivity Commission, "Maximising net returns (after fees and taxes) is the most important way in which the superannuation system contributes to adequate and sustainable retirement incomes."*³¹

If retail super funds underperform on average over long periods of time, for whatever reason or combination of reasons, this is relevant to policy makers interested in system-level efficiency.

4. *Comparisons of category averages are an important way in which people make sense of economic, financial, and social dynamics because they reveal broad patterns in outcomes that arise from differences between the categories. Such analysis has revealed broad patterns in superannuation that are important to members and policy makers.*

Fund-level superannuation comparisons, like many other comparisons of category averages, are useful because they can reveal patterns that arise from the commonalities of the categories.³²

In the case of superannuation, researchers have long noted that there are two distinct "models" or categories of superannuation funds in Australia: not-for-profit funds, especially industry super funds, and for-profit or retail funds.³³

³⁰ APRA (September 2008), *A Response to Review of APRA's Investment Performance Statistics of the Australian Superannuation Industry*, at 10.

³¹ Productivity Commission (November 2016), *How to Assess the Competitiveness and Efficiency of the Superannuation System*, at 7.

³² Some examples include: (1) Real estate, a topic near and dear (in both senses of the word) to millions of Australians. State-by-state housing price growth comparisons are one of the most popular items published by the Australian Bureau of Statistics. Analysts, journalists, real estate professionals, as well as people in the market to buy and sell, combine these comparisons along with other information and perspectives to form a mosaic reflecting their views on the property market or a particular property. Even though no particular house necessarily experiences exactly the average price growth of houses in a state – some houses increase more, some less, and some might even lose value – countless people still find the information useful. (2) Average drug prices among jurisdictions with different health care policies (see, *Pharmaceutical Pricing Policies in a Global Market* (2008), OECD).

³³ See, e.g., Sy, W. (2008), *Pension Governance in Australia: An Anatomy and an Interpretation*, *Rotman International Journal of Pension Management*, Vol. 1, No. 1.

These categories or groups of funds are materially different along key characteristics, reflecting differences in trustee structure, purpose, and strategy:

Table 5 – Superannuation models

Characteristic	Industry Super Fund Model	Retail Super Fund Model
Profit orientation	Run only to benefit members; all profits from investment are credited to members.	To offer superannuation services “as a means to attract savings to earn money from” in order to “generate profit to distribute to shareholders.” ³⁴
Governance	Representative trustees whose directors are generally appointed equally by employer sponsors and unions or other employee representatives. ³⁵ Board decisions generally require a 2/3 majority.	Corporate trustees whose directors are generally appointed by a parent financial services company.
Distribution	In general, the principal way in which members acquire superannuation products is through workplace defaults, with a minority of members joining through public offer.	In general, the principal way in which members acquire superannuation products is through retail offerings, either through advisor networks (often aligned with the issuer) or general advice channels (such as bank branches), with a minority of members joining through workplace defaults. ³⁶
Investment beliefs and asset allocation	On average, industry funds have higher allocations to unlisted infrastructure (5 ppts) and unlisted property (6 ppts). ³⁷ Industry super funds generally encourage members to remain in the balanced option, so that members can benefit from professional management, reduce market timing risks, and enjoy economies of scale.	On average, retail funds have higher allocations to Australian listed equity (5 ppts) and Australian fixed income (7 ppts). ³⁸ Retail super funds generally encourage members to select one or more choice options, to tailor investment and risk exposure to member preferences, among other reasons.

Source: Sy (2008), APRA, ISA

³⁴ “It is only retail funds that generate profit to distribute to shareholders. Importantly, the operators of the retail funds (i.e. the major financial institutions) earn most of their profit through super fund support services such as funds management, financial advice and asset investment. Essentially, the fund is just a means to attract savings to earn money from.” IBISWorld Industry Report K6330, *Superannuation Funds in Australia*, June 2014, at 23.

³⁵ See, Sy (2008) (Observing that “From the way trustee structures were historically set up, directors of corporate, public sector and industry funds are largely (59 percent to 75 percent) drawn from stakeholders such as employer sponsors and fund members, and to a lesser extent (3 percent to 33 percent) from industrial unions and government. In contrast, only 20 percent of retail directors are drawn from particular stakeholders or official bodies, a majority (66 percent) representing none of those parties. Public sector funds have 97 percent of their directors appointed from outside the Board by employer sponsors, fund members, industrial unions, the government, or through executive search firms. Industry and corporate funds follow at 88 percent and 76 percent, respectively. Only 19 percent of directors of retail funds are appointed from outside the Board, with 4 percent being elected by employer sponsors and 15 percent through executive search firms. The remaining appointments are made internally by the Board or through personal contacts.”).

³⁶ Cf., Productivity Commission, *Superannuation: Alternative Default Models*, Draft Report, March 2017, Figure 2.

³⁷ As of June 2015 (see APRA, *Quarterly Superannuation Performance*, March 2016).

³⁸ Id.

Analysis comparing fund-level performance between industry super funds and retail super funds provides useful information in the public interest regarding the performance outcomes between these two models of providing superannuation.

In recent years, comparison of these competing models of superannuation has been a component of the public debate about superannuation policy.

5. *Companies who profit from the retail model of superannuation could be expected to object to statistical comparisons which tend to show the lower benefits to members arising from the model. Their objections should be considered with this in mind.*

Audited fund-level performance data has been collected and published for a long time. These data tend to show that retail super funds perform relatively poorly as a category.

There is a debate about the causes of the differences in performance between superannuation sectors, and this debate is heated because it is important to public policy and bears on the commercial model of for-profit super funds.

Representatives of retail super funds claim that retail super fund average underperformance as a category is a function of demographics and resulting asset allocation. The analyses in this paper, as well as statistical analyses by APRA in years past, do not find support for the position of retail super funds.

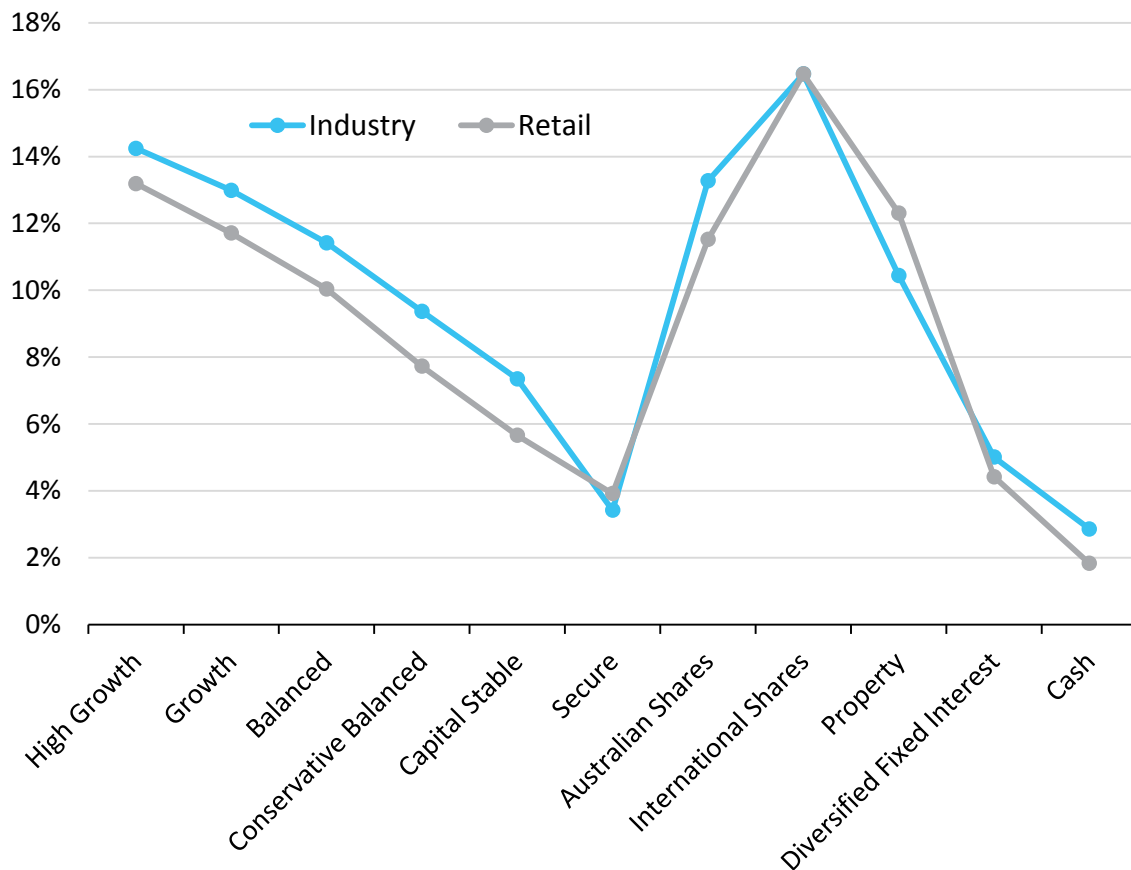
It is not clear why retail super funds continue to oppose analysis based on fund level returns notwithstanding that they have the capacity to undertake research to test whether their positions can be empirically supported.

4. Appendices

4.1 Appendix 1: One-year and five-year performance comparisons

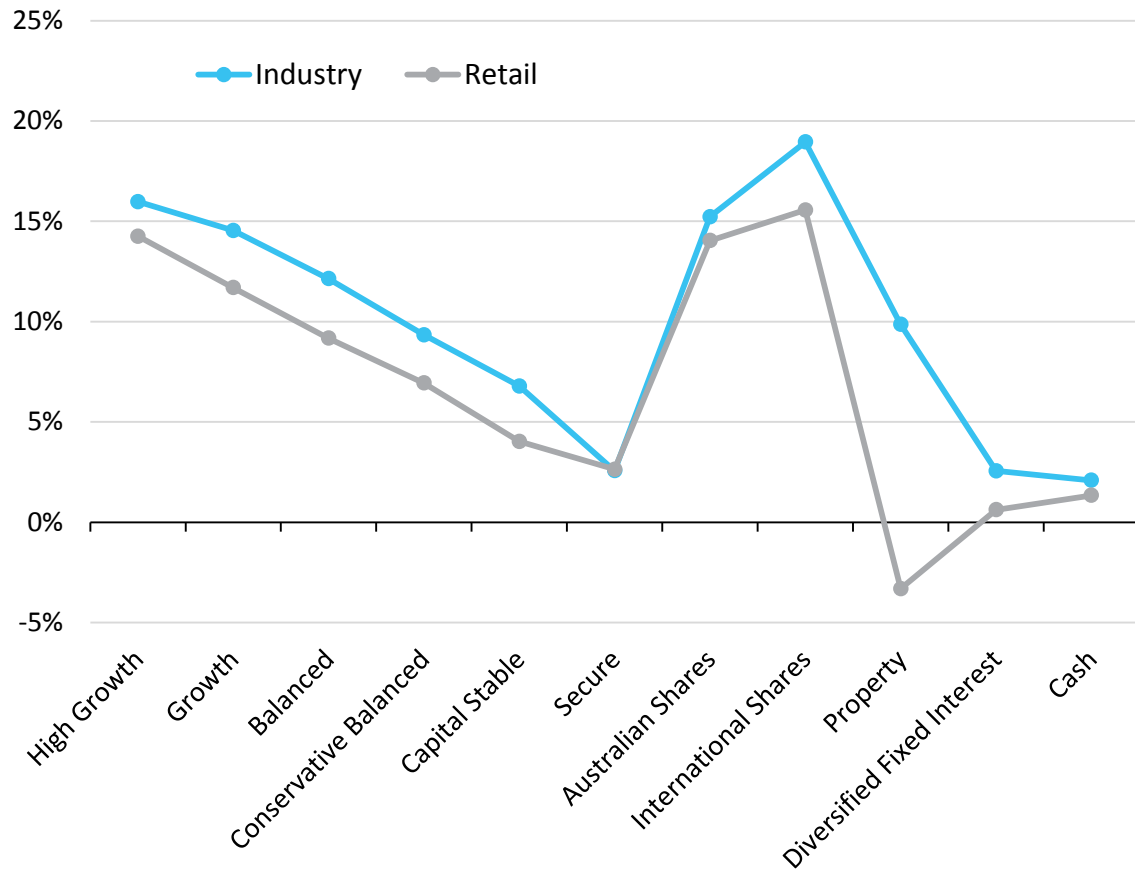
4.1.1 Comparison of pension options

Figure 10 – Pension option median five year returns



Source: SuperRatings (2017), ISA analysis

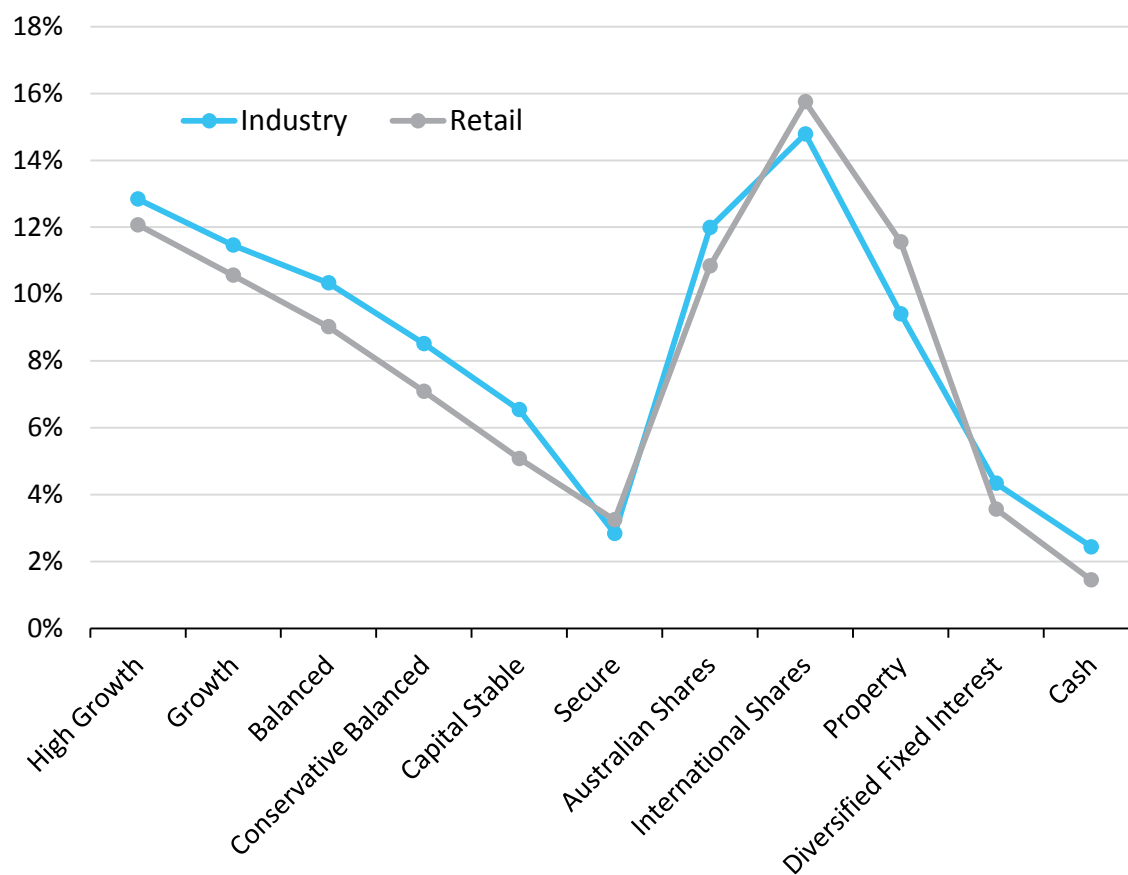
Figure 11 – Pension option median one year returns



Source: SuperRatings (2017), ISA analysis

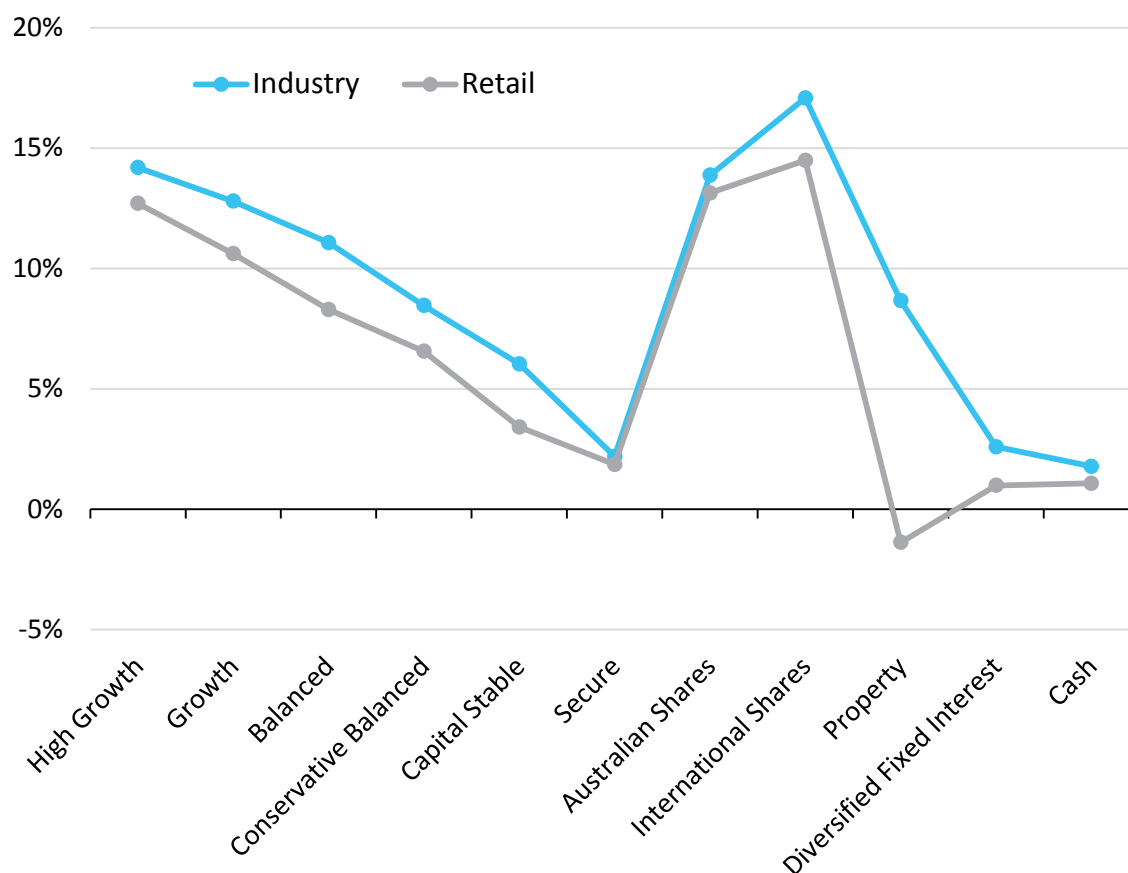
4.1.2 Comparison of accumulation options

Figure 12 – Accumulation option median five year returns



Source: SuperRatings (2017), ISA analysis

Figure 13 – Accumulation option median one year returns



Source: SuperRatings (2017), ISA analysis

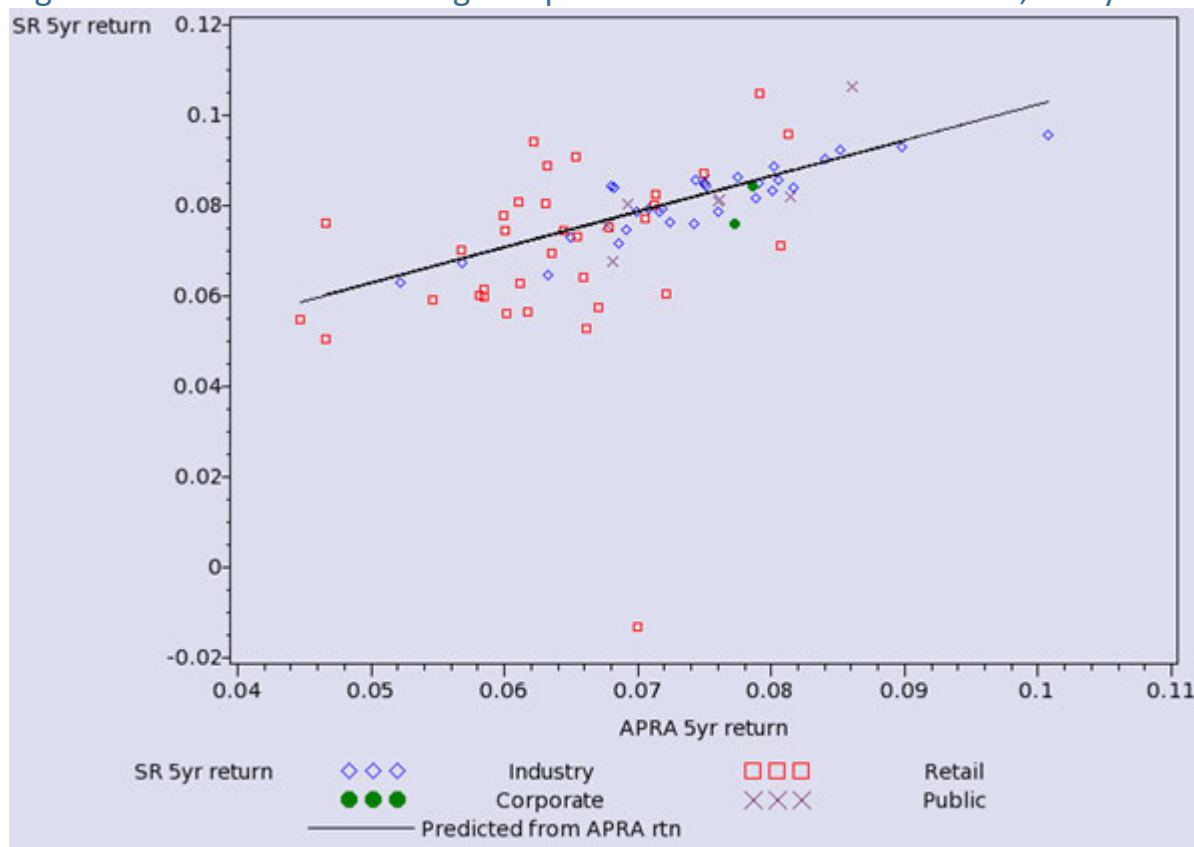
4.1.3 Comparison of largest option performance and fund performance: five years

As shown in Figure 14, there is a reasonably strong linear relationship between five-year APRA fund level performance and the SuperRatings performance estimate for the largest option. There is a clear tendency for high performing APRA funds over five years to have this outperformance matched by the performance of their largest option over five years.

The Pearson correlation between the largest option and the five year fund performance is .721 – a fairly strong relationship. The simple regression shows that 51.4 per cent of the variance in the largest five-year option performance is explained by overall five-year fund performance (adjusted R-squared).

The chart shows that the relationship is stronger for industry funds. Retail funds show greater variability in largest option outcomes for a given five-year performance.

Figure 14 – Distribution of largest option returns and APRA returns, five year



Source: SuperRatings (2016), APRA, ISA analysis

4.1.4 Comparison of largest option performance and fund performance: one year

As explained by ASIC, “Super is a lifetime investment, and short-term figures, such as the last 12 months or less, are not very useful.”³⁹ One-year performance information cannot reasonably be expected to give insight into long term outcomes.

Nonetheless, a comparison of one-year fund-level performance to the one-year performance of a fund’s largest option is included for completeness.

As one would expect, Figure 15 shows considerable variability in one-year rates of return for the largest option relative to a given single year fund-level return.

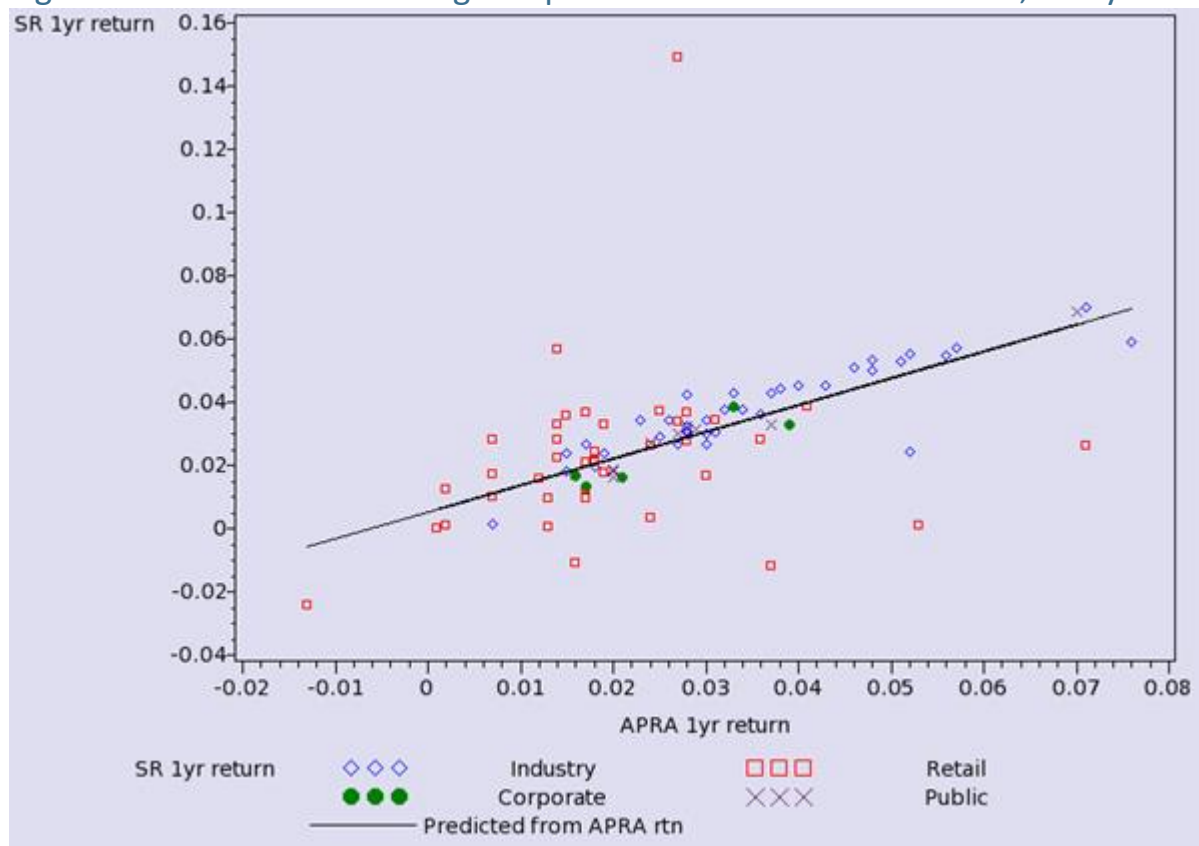
Nevertheless, there is a reasonably strong linear relationship between the APRA one-year performance estimate for 2015-16 and the SuperRatings performance estimate for the largest option. Figure 15 shows this relationship. There is a general tendency for high performing APRA funds over one year to have this out-performance matched by the performance of their largest option over that year.

The Pearson correlation between the largest option and the one year fund performance is .846 – a strong relationship. The simple regression shows that 71.3 per cent of the variance in the largest one-year option performance is explained by overall one-year fund performance (adjusted R-squared).

³⁹ ASIC (2015), ‘Judging a super fund’s performance’, retrieved from <https://www.moneysmart.gov.au/superannuation-and-retirement/keeping-track-and-lost-super/judging-a-super-funds-performance>

Figure 15 shows that the relationship is stronger for industry funds. The chart shows five retail funds whose largest option performance is well below their one year fund performance, and that there are two retail funds whose largest option strongly outperformed their one-year fund return.

Figure 15 – Distribution of largest option returns and APRA returns, one year



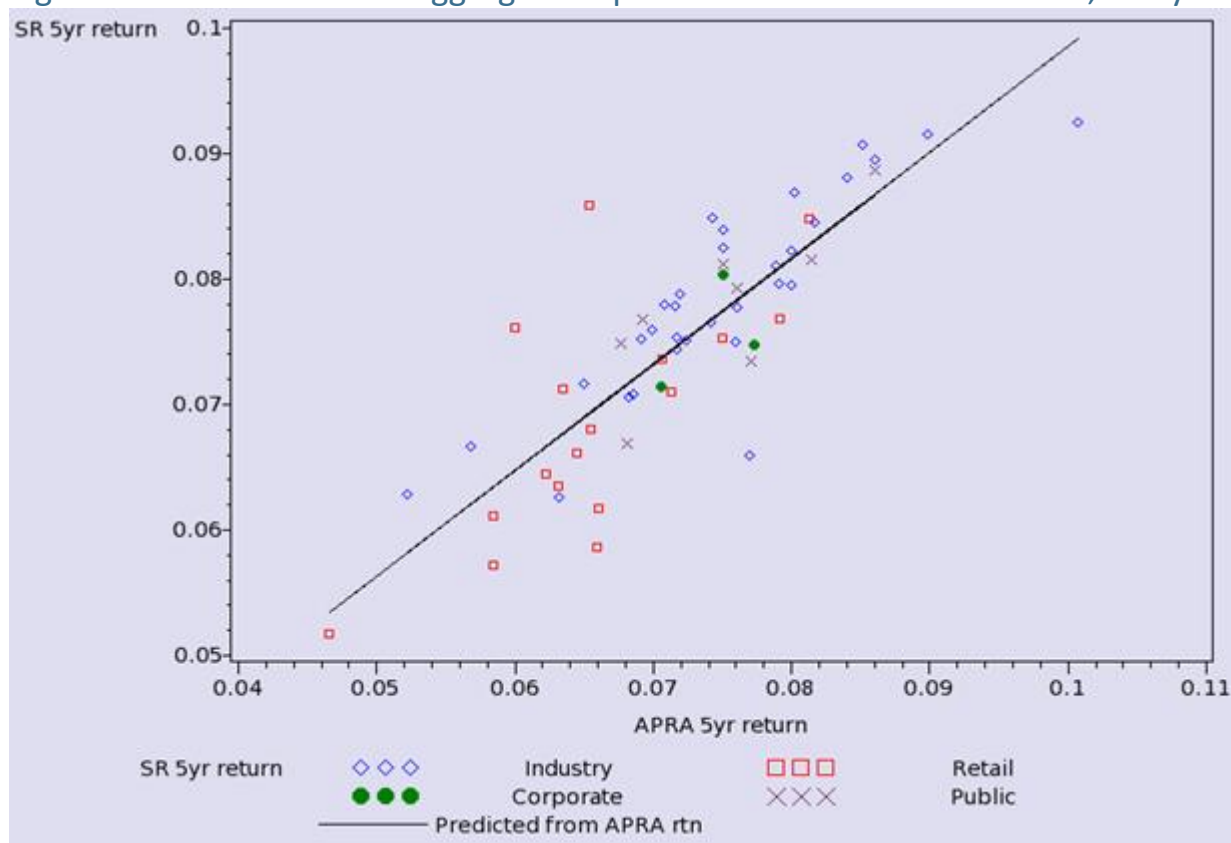
Source: SuperRatings (2016), APRA, ISA analysis

4.1.5 Comparison of aggregate option performance and fund performance: five years

Figure 16 shows the distribution of aggregated option-level returns compared to APRA returns with the different symbols showing fund type. The black line is the regression line of the predicted aggregated option return based on the APRA return.

The aggregated option returns show a clear linear relationship to the APRA fund returns. The blue diamonds representing industry funds have predominantly higher returns than retail, consistent with fund-level comparisons.

Figure 16 – Distribution of aggregated option returns and APRA returns, five year



Source: SuperRatings (2016), APRA, ISA analysis

The asset weighted Pearson correlation between the aggregated option returns and the APRA return was .887. The simple regression of the two variables showed that the APRA fund rate of return accounted for 78.3 per cent of the variance in aggregated option return (adjusted R-Squared). Statistics are significant at the one in ten thousand level compared to the null hypothesis of no relationship.

Knowing the five-year APRA fund return provides a good guide to differences in the aggregated five-year option returns for APRA regulated funds.

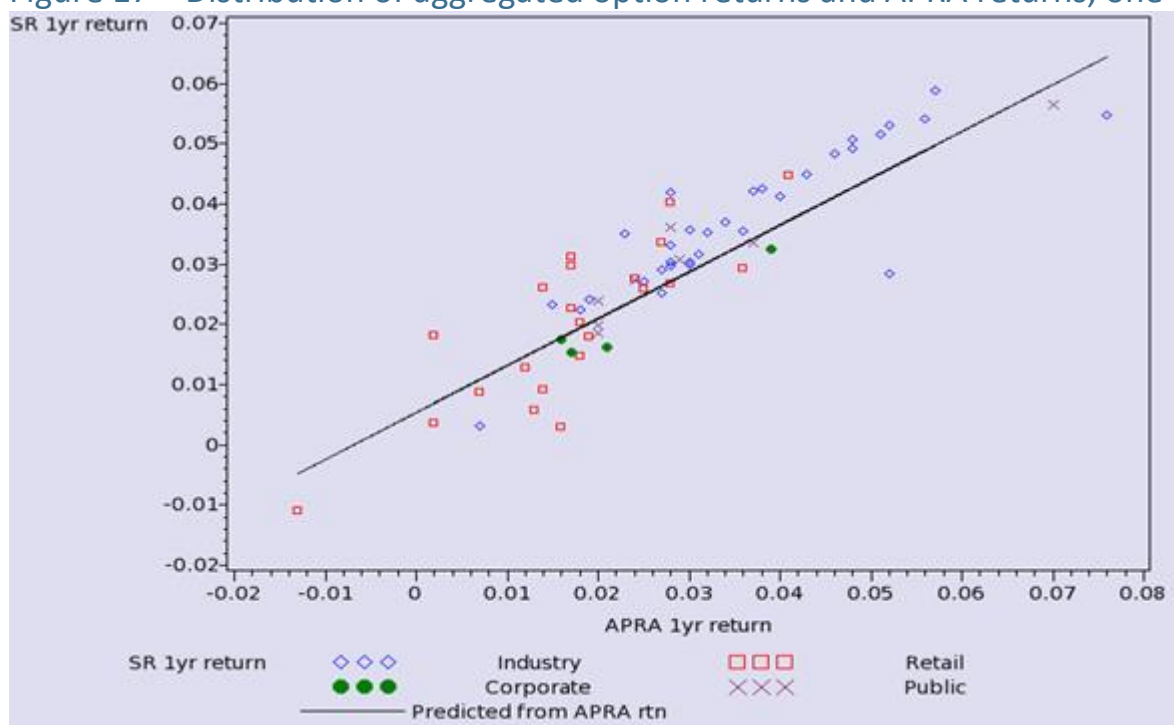
4.1.6 Comparison of aggregate option performance and fund performance: one year

Figure 17 shows the distribution of aggregated option returns compared to APRA returns for the one year ended June 2016, with the different symbols showing fund type. The black line is the regression line of the predicted aggregated option return based on the APRA return.

As mentioned above, one-year returns are generally not considered to be useful indicators of long term results.

Nonetheless, the aggregated one-year option returns show a clear linear relationship to the APRA fund returns. The blue diamonds representing industry funds dominate the high-high returns quadrant of the graph. The red squares representing retail funds dominate the low-low performance quadrant.

Figure 17 – Distribution of aggregated option returns and APRA returns, one year



Source: SuperRatings (2016), APRA, ISA analysis

The asset weighted Pearson correlation between the aggregated option returns and the APRA return was .936. The simple regression of the two variables showed that the APRA fund rate of return accounted for 87.4 per cent of the variance in aggregated option returns (adjusted R-Squared). Statistics are significant at the one in ten thousand level compared to the null hypothesis of no relationship.

At least for this particular set of observations, knowing the one-year APRA fund return provides a good guide to differences in the aggregated one year option returns.

The relationship between fund-level performance and aggregate option-level performance is stronger for the ten-year period (Figure 8) than for the one and five-year periods. This is due in part to the availability of ten-year results for larger funds. Some of the variability from smaller funds drops out of the analysis. Longer-term comparisons also are less susceptible to short term variations. Nevertheless, the strength of the relationship may be surprising given that the ten-year period contains the Global Financial Crisis.

4.2 Appendix 2: Prior ISA analysis comparing fund-level and option-level performance

- Note:** 1. This material is provided as background and to demonstrate that the prior investigations of the degree of statistical correlations between option-level and fund-level returns yielded similar results.
 2. This material is from the Submission of Industry Super Network to the Productivity Commission Inquiry – Default Superannuation Funds in Modern Awards, 2012, available at <http://www.pc.gov.au/inquiries/completed/default-super/submissions/sub027-default-super.pdf>
 3. ISA was known as ISN at that time.

Investment volatility and returns

It is sometimes claimed that lower performance by retail funds is a product of a lower allocation to growth assets, reflecting in part an older membership base.

However, APRA fund level data shows that between 2004 and 2011 the bulk of retail and not for profit funds exhibit returns with volatility in a similar range.

The overwhelming majority of funds have volatility of annual returns between 8 and 13 per cent around a median volatility of about 10.5 per cent (Figures 2b).

The exceptions to this rule are a small number of retail funds with *extremely* low volatility – seemingly with assets allocated entirely to cash or near cash assets. This small group of funds are entirely distinct from the general population of funds, retail and otherwise (Figures 2a).

The dramatic difference in performance is apparent not in the volatility of returns but in average returns.

Figure 2a. Average and standard deviation of returns, including extreme low volatility funds

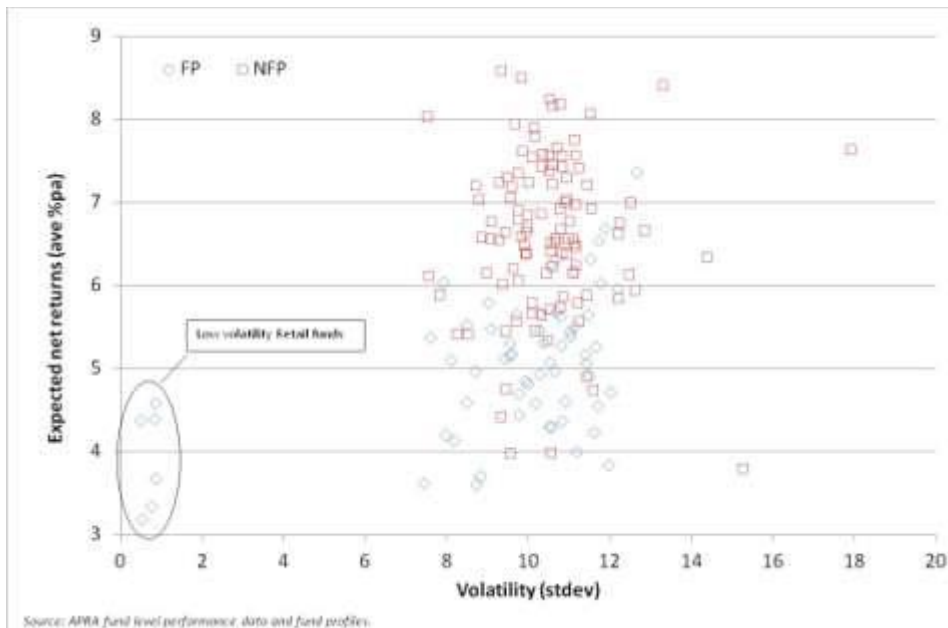
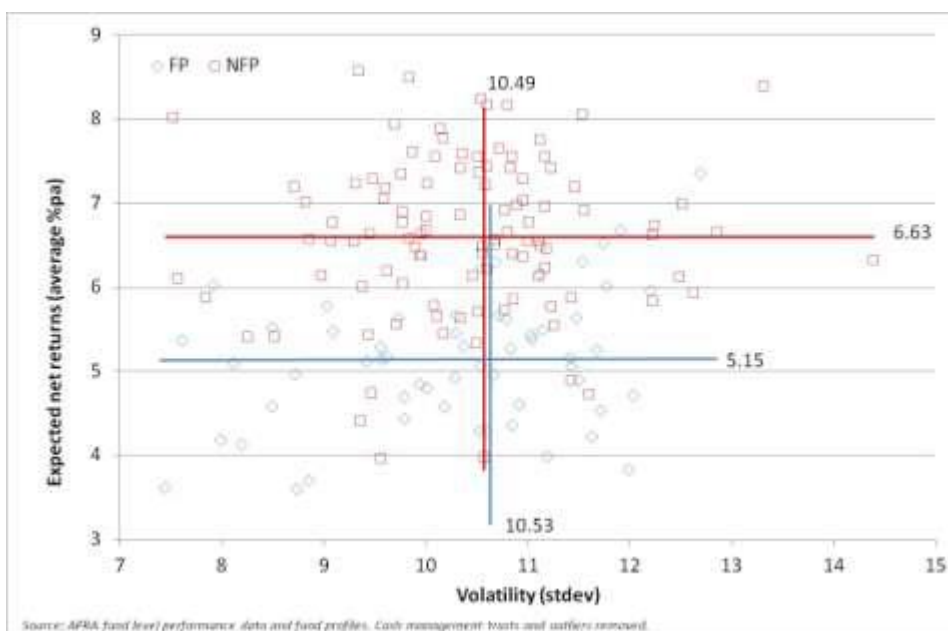


Figure 2b. Average and standard deviation of returns, excluding extreme low volatility funds and other outliers



...

Whole of fund returns and individual investment option returns

In this section, and in research published elsewhere, ISN has utilised APRA fund level performance data. Some industry commentators have criticised APRA data because a ‘whole of fund’ measure does not necessarily reflect the experience of an investor in any particular fund option with any accuracy.

In fact, APRA fund level data shows very strong correlation with the performance of the largest investment option offered by a fund.

ISN has compared the APRA fund level returns to the returns of the largest investment option within a fund listed in the *SMART Fund Crediting Survey*, a proprietary dataset compiled and published by SuperRatings, a private ratings agency.

The return from each dataset has been included for all APRA-regulated funds wherever an annual return figure is available from both data sources between 2007 and 2011.

The value of a whole of fund return figure evidently ‘explains’ over 90 per cent of the return figure of the largest investment option (Figure 5), both for retail and not-for-profit funds. The result is statistically significant at the 99 per cent confidence interval. In only two, seemingly aberrant, cases (both not for profit funds) do the returns from the two datasets show different signs.

Figure 5. Whole of fund returns and largest option returns, 2007 – 2011



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